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THE SCIENCE OF EDUCATION

IN ITS

SOCIOLOGICAL AND HISTORICAL ASPECTS

BY

OTTO WILLMANN, Ph.D.

AUTHORIZED TRANSLATION FROM THE FIFTH GERMAN EDITION

BY

FELIX M. KIRSCH, O.M.CAP., LITT.D.

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TO THE MEMORY

OF THE LATE

VERY REVEREND
DR. THOMAS EDWARD SHIELDS

TEACHER AND FRIEND

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PART II

THE MOTIVES AND AIMS OF EDUCATION

I

TELEOLOGICAL ANALYSIS OF EDUCATION

CHAPTER I

The Instinctive Motives

MAN may follow certain definite aims in his actions. He may recognize something as desirable, useful, or necessary, and then make its attainment the end of his actions. But it is not only conscious aims that determine a man's actions: the springs and motives of human conduct represent a complex union of definite aims, semi-conscious desires and wishes, and aimless impulses (*Drang*). Therefore, in analyzing the motives of human actions, whether of everyday life or of the history of the race, we may not content ourselves with ascertaining the leading ideas; but must enter into that dark field where the free will is confronted by those forces that interfere with its activity. In this dark field we shall find the causes of many human actions that have been repeated, notwithstanding the changing conditions, from time immemorial down to the present day.

Among these actions that have been repeated down the ages, we find the efforts made by man to acquire knowledge and to perfect his own powers. Though we may say that man aims consciously at the ideals of education, still in his striving for these ideals there are forces at work that antedate all conscious efforts. These instinctive motives which prompt man's first efforts to acquire an education, are closely related to, and partly identical with, the spontaneous impulses that are responsible for the beginnings of human science and art and all other human endeavor.

Aristotle was fond of tracing the springs of man's actions back to his native dispositions, and he says that man naturally thirsts for knowledge, delights in studies, and is eager to imitate.[1]

[1] Aristotle, *Met.*, I, 1, p. 980: Πάντες ἄνθρωποι τοῦ εἰδέναι ὀρέγονται φύσει. *Poet.*, 4, p. 1448: μανθάνειν οὐ μόνον τοῖς φιλοσόφοις ἥδιστον ἀλλὰ καὶ τοῖς ἄλλοις, ἀλλ' ἐπὶ βραχὺ κοινωνοῦσιν αὐτοῦ. *Ibid.*: τὸ γὰρ μιμεῖσθαι σύμφυτον τοῖς ἀνθρώποις ἐκ παίδων ἐστίν.

In the natural tendency of every living being to use its members and voice, Plato recognizes the element that developed, under the influence of the deity, into the works of the fine arts.[1] Cicero speaks in the manner of the Peripatetic school when he regards the thirst for knowledge as evidence of the ideal nature of man.[2] Other ancient writers speak of ὁρμάν (to hasten on towards knowledge), or with more stress on the instinctive element, of ὀργᾶν πρὸς τὰ μαθήματα (to crave and long for knowledge). One ancient writer compares the search after truth to the actions of animals, especially of bees, and thus intimates the influence of some instinctive force. This writer regarded the delight taken by children in tales of wonder and adventure as the first manifestation of this inborn craving, and advised teachers to avail themselves of the aid of poetry to keep the craving alive.[3] A Christian thinker, Nicholas of Cusa, takes an even deeper view of this craving for truth and knowledge: "To know and to think, to see the truth with the eye of the mind, is always a joy. The older a man grows the greater is the pleasure which it affords him, and the more he devotes himself to the search after truth the stronger grows his desire of possessing it.... As love is the life of the heart, so is the endeavor after knowledge and truth the life of the mind."[4]

This instinctive element of intellectual activity can best be observed in the actions of children. It appears not only in the eagerness with which they listen to a fairy tale, but also in that universal empirical interest which is shown, chiefly in the case of gifted children, in the questions that they are likely to propose at any moment. True, to some extent these questions may be prompted by curiosity or by the pleasure found in the variety of mental impressions. Still, the desire to know and to understand is certainly also, at least in part, responsible for the questions put by children. If you ask the children whether you should tell them a beautiful story or a true story, they will

[1] Plato, *Legg.*, II, p. 653.

[2] Cicero, *De fin.*, V, 18, 48: "*Tantus est igitur innatus in nobis cognitionis amor et scientiæ, ut nemo dubitare possit, quin ad eas res hominum natura nullo emolumento invitata rapiatur.*"

[3] Strabo, I, p. 19.

[4] Janssen, *History of the German People*, transl. by Mitchell and Christie, London, 1896–1910, Vol. I, p. 4. Cf. the following from English writers: "The desire of knowledge, like the thirst of riches, increases ever with the acquisition of it" (Sterns); "Knowledge desires increase: it is like fire, which must first be kindled by some external agent, but which will afterwards propagate itself" (Johnson).

invariably call for the true story. Even if they let the fairy tale pass as a true story, it is obvious that their desire to hear what is true betokens their craving for something positive, something more than a mere fable.

A similar tendency is at the bottom of the children's eagerness to learn the names of things. When asking for the name of a thing the children obey the general law that an object can not occupy its proper place in the order of things before it is named, and that it is only when we know the name of a thing that we regard our knowledge of it as really valid. When the child asks for the *why* we have the first proof of the awakening of the speculative interest. This question shows that the child's mind is beginning to grope for an objective interconnection of things and events, and may be regarded, even if it often ends in a mere play of questions, as the initial step toward acquiring a world-view. All healthy children are eager to be active, to construct things, to imitate what they have seen, to exercise their powers and strength; and this eagerness must precede the acquiring of any art and should be turned to account in the educative process. After the children grow a little older, they will delight in collecting material things: insects, plants, coins, stamps, post cards, etc. But when the boy begins to collect things less material—such as words, phrases, proverbs—he is already under the spell, to some extent, of the filing cabinet of the research worker.

2. These inclinations contain the germs of what will later, under favorable circumstances, develop into a love for scientific research, for artistic expression, or educational activity. Even in a fully developed and conscious tendency there will always remain some traces of the first instinctive impulse. In a genius this instinctive impulse will act as a directing force. To a man of extraordinary ability it will prove a valuable aid; and though it is less manifest in the average man, still it will be present and active in him also. Given a highly developed personality, the habitual and characteristic attitude which can be traced to what was originally only an unconscious and instinctive impulse, will be different in the scientific research worker, different in the artist, and, again, different in him whose main efforts are directed towards the perfecting of his inner nature. In a word, the thirst of knowledge, the artistic instinct, and the longing for culture are markedly different from one another. The scientific research worker is actuated by the impulse to grasp what is

given and to receive it without the least alteration in his own mind, to convert all self-activity into the highest receptivity, to risk all spontaneity to arrive at the purest reception. The artist feels an instinctive impulse to express part of himself in objective reality; he assumes a receptive attitude towards himself, and what he receives is expressed in a spontaneous creation. The tendency to inner perfection, *i.e.*, to education in its narrower conception, is neither so unselfish nor so energetic as the other two propensities. Its aim is to receive and assimilate, to create and enjoy. It may be spontaneously active and receptive, yet will always return to the equilibrium of itself. It deals with the outer world to become familiar with it, but not to learn its causes. It dwells on the mental pictures, not for the purpose of expressing them in objective realities, but with the intention of looking in the outer world for the objects corresponding to these mental pictures, and thus its aim is to make man's inner nature a complete and truthful whole.[1]

This tendency may be found in scholars and artists, and it is they who have given the best description of its working. Goethe has, in a wonderful study of himself, described this instinctive longing for intellectual perfection and has well distinguished it from the instinctive impulses at work in the poet and artist. Wilhelm von Humboldt speaks, not as a scientist, but as a man intent upon his intellectual perfection, when he tells us: "I can not resist the desire to see, to know, and to investigate as much as possible; it would seem as though man were after all in this world to convert all his environment into his own property, into the property of his mind. But alas! life is all too short: when I must depart hence, I would leave as little as possible that I had not brought into contact with myself."

In the case of this genius the longing for intellectual development grew into an irresistible craving, whereas in the average man it proves, though not an instinctive force, yet a strong and spontaneous motive. This spontaneous desire of intellectual development is not influenced by the prospect of gain or the consciousness of duty performed. Neither is it subject to any other interest; but is in itself a powerful interest, direct and not indirect, aroused by the charm of something attainable and fostered by the joy found in mental growth. It belongs to the imponderables of education; it can not be controlled at will, but must be nourished and cultivated intelligently. It is killed by

[1] Goethe, *Winckelmann*, Ausgabe letzer Hand, 37, 18.

demanding too much of the pupil; and can not assert itself if the pupil must study a subject before his curiosity has been aroused concerning it. Still the school must direct this spontaneous desire of knowledge; else it will degenerate into playing with the educational values or vacuous polymathy.

3. The instinctive impulse to learn is more familiar to us than the instinctive impulse to teach. Still, the activity of the teacher is also prompted, to some extent, by a certain rational instinct. Even the social instinct impels us to share an intellectual content with our fellowmen; and to find perfect joy in our knowledge, we must communicate it to others. Cicero reports the Pythagorean Archytas as saying that "If a man were to ascend to heaven and there see the nature of the world and the stars, he would still enjoy naught of this happiness if he had none to whom he could relate the wonders he had beheld."[1] And what Seneca says of himself is true of all men: "Even the best and most useful gives me no pleasure if I alone may know it. If all wisdom were offered to me upon the condition that I keep it hoarded up in my own soul and share it with no one else, I would reject it: we can not enjoy a treasure without a companion to our joy."[2] The following verse dates from the Middle Ages, "*Condita decrescit, vulgata scientia crescit.*" There is, indeed, an internal relationship between the search after truth and the imparting of it to others: "Knowledge is intended by its very nature to be communicated to others: born in the solitude of the mind it seeks to be evaluated in the minds of others; every thought and every discovery tries to prove its power by coming into contact with strange thoughts and by giving birth through the new combination to new things."[3] The desire to present itself is connatural to skill and knowledge, and often leads to the ignoring of the secondary considerations of success,

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[1] Cicero, *De amicitia*, 23.

[2] Seneca also observes that he desires to teach his correspondent and that he is glad to learn for the purpose of teaching others: "*Ego omnia ista in te cupio transfundere et in hoc aliquid gaudeo discere, ut doceam; nec ulla res delectat, licet sit eximia et salutaris, quam mihi uni sciturus sum; si cum hac exceptione detur sapientia, ut illam inclusam teneam nec enuntiem, rejiciam: nullius boni sine socio jucunda possessio est*" (*Ep.* 6, § 4). Cf. the following from modern authors: "Seldom ever was any knowledge given to keep, but to impart; the grace of this rich jewel is lost in concealment" (Bishop Hall); "The seeds of knowledge may be planted in solitude, but must be cultivated in public" (Johnson).

[3] Trendelenburg, *Kleine Schriften*, II, p. 22.

profit, and fame. Though performing before an unappreciative audience, the Theban flute player tried, nevertheless, to render his music perfectly, for he said, "Even if no one will appreciate my efforts, I shall still please myself and the Muses." A kindred prompting urges the born writer to give himself up to literary work, and fortunately for literature and the fine arts this disinterested service of the Muses goes on without end. That the writer's itch as well as the impulse to teach may be traced back to very primitive instincts, we may see from the doings of children. They delight to tell all that they heard and learned in school; and one of their favorite games is to play school, to be the teachers of their younger brothers and sisters. Schiller's words: "What they have themselves learned to-day, that they would teach to-morrow," is as true of the little ones as of the scholars who, thinking they had understood Kant, were too eager and too quick to preach the new gospel from the housetops. The propaganda of scientists as well as of artists is based on the pleasure found in transmitting to others what we have received, in having others share our joy; and the pupils are generally more eager to teach than the masters themselves.

The fondness for teaching does not imply the ability to teach, but the latter depends even more than the former upon native gifts. There are born teachers whose specific talent is the *donum didacticum*. These men are the flower of the teaching profession; but only the flower, for "many wand-bearers, few bacchanals," is true also of the teaching profession. An instinctive force operates in all who are teachers by the grace of God. Only in view of such an instinctive force can it be explained, why Comenius made the writing of a Latin textbook the supreme goal of his desires; why La Salle scorned wealth and high rank, leisure and pleasures, in order to realize his dream of a teaching order; or why Pestalozzi devoted a whole lifetime to the study of the A B C. An impulse of this kind may also urge the formation of the mind, the development of man's inner nature, and thus inspire Promethean activity in intellectual matters. Socrates was led by such a prompting: he believed himself called to form the souls of men; he looked for his materials in the life of his own soul as well as the souls of others, and regarded his vocation as an instinct received of the deity, which he was bound to obey even at the risk of having to die repeatedly in the performance of his duty.[1]

[1] Plato, *Apol.*, p. 29, 30.

CHAPTER II

The Indirect Interests

1. The spontaneous impulse to learn treats the intellectual content as valuable for its own sake, and hence has a direct interest in education. One may, however, regard education merely as a means to an end; and he who regards it from this viewpoint alone, has only an indirect interest in education, being interested directly in what he wishes to obtain by means of an education. Knowledge and skill are important factors in life; knowledge is power; education is a valuable asset; and rank, position, and influence are open to the man of learning. Thus man can attain great ends by means of education, and these rewards will naturally call forth greater efforts than the desire of knowledge for its own sake. The indirect motives can be traced back to the instinct of self-preservation and to the desire natural to man to increase his influence by means of wealth, rank and power.

The practical value of knowledge and skill has ever been one of the strongest forces in promoting the cause of education. We find that men have always evaluated education either for the aid it gives in acquiring material goods or for its social advantages. The peoples of the East pursued studies mostly for utilitarian purposes, and the Greeks regarded their materialistic trend as irreconcilable with a higher evaluation of mental work.[1] But the ideal conception of art and learning was not altogether unknown in the East. The Chinese have taken the narrowest view of the end of education: with them studies are but the rungs by which the individual ascends the social ladder to a higher rank. That wealth and power will of themselves come to the learned man, we see from the Book of Proverbs: "By wisdom the house shall be built, and by prudence it shall be strengthened. By instruction the store-rooms shall be filled with all precious and most beautiful wealth. A wise man is strong; and a knowing man, stout and valiant."[2] Addison writes in the same strain, "Wisdom is better than strength. Knowledge is that which, next to virtue, truly and essentially raises one man above another."

[1] Cf. especially Plato, *Legg.*, V, p. 747; *Rep.*, IV, p. 436.

[2] Proverbs, XXIV, 3 ff.

Among the Greeks the desire of honor was a stronger educational motive than the desire of gain, though there were instances where material profit was made the primary end of education, so that there was need of emphasizing a more ideal conception.[1] The story told of Thales is a good illustration of Hellenic industrialism. To refute the charge made by merchants that philosophy was of no practical value, Thales bought up all the oil-presses during a year that promised, according to the forecasts of the astronomers, a rich crop of olives, and thus he amassed great wealth.[2] Though the Romans followed the Greeks in distinguishing the *artes liberales* from the *viles ex professo artes, quæ ad instrumenta vitæ plurimum conferunt*,[3] yet they made no secret of their tendency to make practical usefulness the sole standard for evaluating all studies,[4] and the school system of the period of the Empire was organized with a view to securing the greatest practical and social benefits. True, the liberal studies of the ancients were not intended to fit the student for any special profession. Still they represented the arts and sciences that were forces in national life, and thus their mastery brought social and material gains. The student in the school of oratory looked forward to prestige, honor, rank, wealth. In this point he resembled many a modern pupil who requires similar inducements to persevere in his studies.

In the Middle Ages the school system was more removed from the needs of practical life. But even at that time it was found necessary to warn the students against being too much taken up with the hope of financial gains or high honors; and the complaint was actually made that "in our time the minds of our young people are too intent on material gain."[5] The

[1] Thus Diodorus, II, 29, speaks against the κατὰ τὴν ἐργολαβίαν κέρδους στοχαζόμενοι, cf. Galen, *Meth. med.*, I, 1, and several passages in Plato. Aristophanes says in his *Nub.*, 648: τί δέ μ' ὠφελήσουσ' οἱ ῥυθμοὶ πρὸς τἄλφιτα.

[2] Aristotle, *Pol.*, I, 11, p. 1259; Cicero, *Div.*, I, 49, 111.

[3] Seneca, *Ep.*, 88.

[4] Cicero, *Tusc.*, I, 1: "*utilitate artis terminavimus modum;*" Cicero is here speaking of mathematics, but it was held to be true of general education. Horace denounces the industrialism of the schools in his *Art of Poetry*, (ll. 330 ff.): "*Hæc animos ærugo et cura peculi Cum semel imbuerit, speramus carmina fingi...?*" Seneca says, "Study rather to fill your mind than your coffers; knowing that gold and silver were origninally mingled with dirt, until avarice and ambition parted them." Calpurnius Siculus writes as an agrarian (*Ecl.*, IV, 23 ff.): "*Frange, puer, calamos, et inanes desere Musas, Et potius glandes rubicundaque collige corna: Duc ad multa greges, et lac venale per urbem Non tacitus porta*, etc."

[5] Vincent. Bell., *De erud., fil. reg.* 73.

popular saying, "Knowledge is power," can be traced back to the Middle Ages, for it is Roger Bacon (d. 1294) who said, "*Ipsa scientia potestas est.*" But the saying became widely known only through the teaching of Francis Bacon: "*Scientia et potentia humana in ipsum coincidunt.*"[1] Looking at the particular words employed by the two writers, we might find it significant that the Scholastic speaks of *potestas*, the power of authority, while the father of modern naturalism speaks of *potentia*, the power which is such by its own virtue. The saying, "*Doctrina in dictis, scientia in factis est vera virtus,*" as well as the distich,

"*Disce libens: quid dulcius est, quam discere multa?*
Discentem comitantur opes, comitantur honores,"

seem to be of later date. The Renaissance revived the ancient tendency of making ambition the chief incentive to study, and the educators of that period approved and employed this principle extensively. The indirect motives were allowed a still wider scope when the schools came to be regarded as training schools for public service. The utilitarianism of the 18th century introduced the bread-and-butter evaluation of studies. Rousseau insisted that the pupil should feel free at all times to ask, "Of what benefit is this to me? What shall I gain thereby?" And the Philanthropinists of the Enlightenment as well as of our own day recognize no higher standard for the evaluating of studies than that of direct utility.

2. However, educationists of deeper views have ever opposed the dominion of these indirect interests and have contended that the direct interest as well as the moral and æsthetical motives should prevail in education. But while opposing utilitarianism and emulation, they have at times forgotten that the indirect interest extends beyond these abuses, that it may justly claim a place among the educational aims, and that it will always, because of the exigencies of human nature, retain this place. To illustrate: the pupil who is encouraged in his studies by the hope of a successful career is not the beloved of the Muses, but is not on that account a narrow egoist. We may well respect that father who gives his children a good education in the belief that to equip them for the struggles of life is more important than to hoard up for them silver and gold. And the statesman

[1] Büchmann, *Geflügelte Worte*, Berlin, 1880, p. 247. "Knowledge is power," is the popular version of Hobbes' "Scientia propter potentiam."

who endeavors by spreading knowledge and encouraging useful arts to promote the welfare of the nation, is actuated by very praiseworthy motives. In short, to fit oneself and others for future work and achievements is, if done in the right spirit, not only not blamable, but very laudable. It is true, utilitarian motives are not of the highest order; they are inferior to the motives that prompt us to pursue our studies for their own sake. Still, so long as these lower motives do not crowd out the loftier aims, the educational content will not suffer if influenced by motives of practical utility.

If, however, all higher aims were excluded from the schools, then the educative process would become purely mechanical. Yet one may go to the opposite extreme also: witness the Greek conception of the end of education which was too idealistic,[1] and which had to be corrected by Christian philosophy.[2] Education is concerned with what is universally recognized as valuable, and what is so recognized will prove, at least in great part, of use to all. The subject-matter of teaching must be modified considerably by those factors that are an influence in daily life, and in this sense the school must serve the practical needs of life. Utilitarianism errs, like every other cult of the indirect aims, only in that it takes too narrow and too low a view of life: it regards life merely as the struggle for existence; whereas the adequate view of life, while not excluding this phase of life, includes other phases of less egoistic activity.

If the questions: "Of what benefit will this prove to me? How may I utilize it in later life?" represented the sole standard for the evaluation of knowledge, then the supreme function of a school would be to lead its pupils by the shortest possible road to wealth and influence. But if, on the contrary, there would be no relation whatsoever between the studies and their future utility, then there would be danger lest the pupils, if lacking the higher aims, grow indolent and listless. An institution whose students are exclusively intent on cramming for examinations or on fitting themselves for a lucrative career, is undoubtedly far removed from the ideal school with its broad humanistic spirit. Yet if we exclude all these indirect aims and all tangible profits, the average student will lack the inducement for persistent efforts. For instance, the young noblemen who go to the university for the purpose merely of broadening

[1] Vol. I, ch. X, 1.

[2] Vol. I, ch. XV, 1.

their intellectual horizon and of obtaining a smattering of higher learning, do not gain much from their attendance in the lecture halls. Again, the education of girls that does not look forward to the practical duties of women, is generally shallow and spends itself on an endless variety of fads and frills. Hence we should not underestimate the fact that the course of study leads to professional honors and distinctions. This fact may be regarded as a leaven in education, and the organization of the school system must take it into account. However, a due appreciation of higher educational motives and aims must prevent these utilitarian tendencies from becoming the main factor in education.

3. All these motives, based as they are upon the utility of education, imply only an indirect interest in education, but are nevertheless conscious, while certain other motives, indirect like them, are by nature more or less subconscious and instinctive. If any subject of education is widely popular, we may be certain that its popularity is owing not alone to its innate value or its practical utility, but also to a third factor, namely, the tendency of man to follow the example of others, to imitate the leaders of society or the majority of his fellowmen. It is here, too, that the truth of Aristotle's view that man is of all beings the most imitative, come home to us. This universal need of conforming to others might also be traced back to an instinctive impulse of human nature. Men do, study, and practice what others are doing, studying, and practicing. Men approve of whatever happens to be fashionable, and content to do what others are doing they ask few, if any questions, about its value or utility. All studies, especially if unorganized and pursued informally, are ever subject, to a certain extent, to the caprices of fashion; and every genuine form of mental culture is paralleled by some fashionable imitation that is but a counterfeit of the original. Fashion has been well described as the stepsister of custom. It is characteristic of fashion to make a sport of what is serious in customs, and thus fashionable education is real education perverted into a toy and plaything. Measured by higher standards, even a utilitarian interest in education is superior to that dictated solely by considerations of fashion. The mechanic who is a draughtsman because of his trade, the musician who practices on different instruments, the hotel-waiter eager to learn modern languages—are all pursuing more wholesome studies than the fashionable miss who paints in oils, strums the piano, and chatters a jargon of French. However, her abuse

of education, all too common in fashionable society, must not blind us to the important rôle that imitation plays in education. In the schoolroom the instinct of imitation is one of the strongest motive powers; and they are not the worst pupils who learn and study because others before them have done so, and because others after them will follow their example. Though their motive savors of gregariousness, still it may be raised to an *esprit de corps* and may be connected with a sense of duty much more readily than any selfish desire of honor and gain.

CHAPTER III

The Cultural Interest[1]

1. While striving to become like others in intellectual attainments, man must realize that education is an honor and ornament, and thus he has a standard for evaluating education that is based on personality. This truth that knowledge and skill produce not only external results, but confer useful qualities and perfect man's whole nature, is recognized even by primitive peoples. The savage must learn the use of arms for the purpose of the battle and the hunt. But even he appreciates what may be called the ornaments of his simple life: the song, the dance, the procession, the passage of arms, the tournament; and the brave must be as familiar with rhythmic movements as with the shooting of the arrow and the hurling of the spear. In the early stages of civilization there is less need for giving prominence to what may be called the physical perfection of the race: civilization demands service and achievements, and is more concerned about special arts (*partielle Fertigkeiten*) that have particular aims than about such as are mere ornaments or as increase one's self-consciousness. But by enriching life in all directions and by giving it a higher content, civilization offers indirectly new and more effective inducements for the conscious and deliberate formation of one's personality. Civilization calls forth noble and self-conscious activity in the domain of the intellect as well as of æsthetics, and this activity may under favorable circumstances become the standard and goal of all education. Among the Greeks this motive was the principal

[1] *Bildungsinteresse;* cf. Monroe, *Cyclopedia of Education*, s. v. *Culture and Culture Values.*

one; they taught and learned, practiced and performed, for the purpose of acquiring the ability and the taste for expressing their inner nature and for spiritualizing the outer world; and this aim was regarded as the only one worthy of a free man. Succeeding periods did not attach the same importance to the personal element in education. The personal element was even ignored for short periods, yet, owing to the influence of the Greek ideal, it always reasserted itself.

Our conception of education shows unmistakable traces of the Hellenic παιδεία and these very elements are a safeguard against the encroachments of utilitarian views. Among the different motives of present-day education there is, in fact, a distinctly cultural interest. This interest is concerned with cultural values of all sorts, not because of their inherent charm, as are the instinctive motives, nor because of their practical utility, as are the practical interests, but solely for the purpose of enriching and forming the inner nature; it is an artistic sense engaged on intellectual materials. From this point of view knowledge and skill are our real possession only after they have entered into our nature, *i.e.*, have gone over, as it were, into our bones, to ennoble and refine our whole being. Only in this way can knowledge and works of art become truly educative and materials for building up one's inner nature.

This cultural interest is æsthetical and artistic in character. It is primarily concerned with the arts and is intimately connected with the æsthetical interest, but lacks the disinterestedness of the latter. In the arts the cultural interest seeks only artistic appreciation and taste, and does not enter into their technique any further than is necessary for its object. It also deals with languages—for they are the connecting links between the outer and the inner world, give form and expression to our thoughts, and are the medium for communicating our ideas—but it devotes to them no more time than is needed to acquire the power to express one's thoughts in an original and individual way, and to assimilate the words of another with our own thoughts. The cultural interest deals with the sciences for the purpose of attaining a vigorous mental life as well as a clear view of things and their relation to man; and it makes their content the ground of varied activity. The cultural interest, however, extends beyond knowledge and skill and expresses itself in customs, habits of life, and social intercourse, so that its aim is here also the enriching of the personality and the assimilation of the outer world with the inner.

2. This interest in forming the personality is opposed to the tendency to attain practical skill. To be practically efficient, one must devote his attention to some special department. But the personal tendency in education does not attend to special fields. It is taken up with general elements, strives to bring the mind into contact with many things, deals, therefore, with different sciences, and consequently follows a policy that is contrary to what modern civilization has introduced—the division of labor. All practical education is modified essentially by the content of the respective art or science; its goal and standard is the special department in which the pupil would excel. Cultural education, whose aim is the forming of the personality, is more free in regard to the content of its subjects, for its object is, not to master them in their entirety, but to assimilate as material for the organic growth of the pupil's mind whatever they contain of cultural elements; some certain effects to be obtained in the pupil's mind are therefore the goal and standard of cultural education. If the educator aims at practical efficiency, then the period of schooling will be over as soon as the special aim has been attained. But the aims of cultural education can never be fully attained: no school can give a complete course in general culture, and the student must continue beyond the period of schooling to perfect himself along cultural lines; and he will find real satisfaction only when he is free to select whatever appeals to him as worthy of being assimilated.

To this opposition between practical efficiency and cultural education we can trace the conflict between the schools and the demands of life. The world demands of the young that they study for life; but the school contends that they should live for their studies, that they must spend some years in intellectual growth, and that their minds must be developed during these years irrespective of the immediate needs of practical life. The school justly claims the right to develop the latent powers of the child, without being obliged to prove in each case that these powers will in after life be put to practical use. The school must afford light and air to the tender plants of the human faculties, even though most of these faculties may never attain to maturity. The elementary school preserves the child from being put prematurely to work, and does its utmost with its modest amount of intellectual content to create some intellectual interest and to spiritualize the child's skill. The higher schools demand of their students a generous amount of abstract study of such subjects as are not immediately useful, to the end that the

young people may realize the meaning of mental growth and strength and be stimulated to convert in later life all their specialized knowledge and skill into an organic part of their personality.

The principle of humanism is one of the formulations of the personal tendency in education. Proceeding from the concept of the Roman *humanitas*, it correlates all studies and arts with what is distinctly human in man. It is mainly concerned with the ancient world, not only because of its inner relationship with that age, but also because the ancient classics constitute the best material for a kind of education that must be removed as well from the distracting influences of the needs of everyday life as from the danger of premature specialization.

The principle of formal education springs from the same tendency. It opposes the view that the basis of education must be broad and comprehensive with regard to content and that future efficiency is unthinkable without the mastery of diversified knowledge. It demands, on the contrary, that the formative powers of the mind be awakened, and maintains that these will of themselves prove equal to the different material they will have to cope with; just as the knife, if sharpened, will cut different things, and as the muscle, once it is developed and strengthened, will prove equal to different kinds of work. This principle suggests the study of the formal subjects: language and grammar, mathematics and logic; and advises that the material of these branches be selected and treated with a view to securing the greatest possible amount of mental training. It implies, therefore, that certain intellectual qualities should be regarded as the goal and standard in selecting the material for the lessons and exercises.

CHAPTER IV

The Moral Motives

1. Any serious effort made to enrich and refine human life must take into account the moral nature of man. Man's inner nature can not be truly developed without developing his moral sense. This interaction between the cultural interest and moral striving is expressed in many terms employed to designate the end of education. In the Greek καλογαθία the good is added to the beautiful. The Latin *erudire* expresses that man's thoughts as well as his morals should be raised from what is rude and

vile. When we speak of inner refinement we mean moral and intellectual refinement; and when we speak of humanism, idealism, harmony of nature, and the like, as being the end of education, we combine the intellectual and the moral into a unit.[1] Even the practical tendency in education leads eventually to moral aims: the *bonæ artes* represented such knowledge as was useful and gave man solid moral worth; and when we advise the young to acquire a good, solid education we are conscious both of the usefulness and the moral value of learning. Intellectual health implies both the instinctive craving and the moral striving for knowledge. This is well expressed in the dedication of the Rhetoric attributed to Aristotle: "As health is the custodian of the body, so education is the custodian of the soul... It teaches one how to acquire all that is good. It is a pleasure to see with the eyes of the body, but to see with the eyes of the soul, that is indeed wonderful."

This view, that knowledge and skill should promote moral development, antedates other conscious aims. In history we meet the ideal of the wise man earlier than that of the educated man. That all study and practice should be conducive to virtue, and that they are truly efficient only when actuated by moral motives, appeals more readily to common folk than the æsthetical development of one's personality. There are many Eastern sayings to the effect that intellectual growth without a corresponding moral growth is of no avail, and that only the pure can enter into the secrets of science. For instance, the Chinese describe justice as the landed estate of the well-educated man, while the enrichment of his mind is his gain and profit.[2] The Hindus teach that only the pure and humble can profit by the study of the *Vedas*.[3] The morally beautiful was the object of Greek education: the Spartans prayed the gods to grant them the beautiful on the ground of the good.[4] Hence the philosophers taught nothing new when insisting that study and practice should make man better. They merely recalled the old truth to the minds of their countrymen, and warned them

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[1] The Danish word "danne" expresses both intellectual culture and moral excellence; it means to form, to develop; "dannelse" means a picture, culture, and education; but "dannemand" is an honest man, and "dannequinde," an honest woman.

[2] Vol. I, ch. VIII, 3.

[3] Cramer, *Geschichte der Erziehung und des Unterrichts*, II, p. 62.

[4] Τὰ καλὰ ἐπὶ τοῖς ἀγαθοῖς. Plato, II, *Alc.*, p. 148, and Plutarch, *Inst. lac.*, p. 253 ed. Hutten.

against following a purely æsthetical aim in education. Plato inculcates the truth that poetry and music are not given to us for aimless enjoyment, but as a means for regulating, harmonizing, and beautifying our inner nature.[1] The Stoics were rigorous in correlating all studies with moral aims, and refused to consider any studies as liberal unless they assisted man in attaining freedom of desires. They considered ethics as the only science of real intrinsic value; and in comparison with it, put the cultural studies on the same level as the vocational arts.[2] The ancients also taught that morality must be, not only the end, but also the starting-point, of education. Plato tells us that the sensual man must, if possible, be made morally better before being taught;[3] and a Stoic maxim reads, "*Mores primum, mox sapientiam disce, quæ sine moribus male discitur.*" The ancients in general knew nothing of searching after truth for its own sake; and though they contrasted the theoretical tendency of the mind with the practical, they regarded both as being ethical.

2. With these views the educationists of all ages agree in so far as they all maintain that education must develop the moral sense. But they do not agree as to the power that knowledge has to make a man morally good. The intellectualistic view, to which modern pedagogy inclines, considers instruction as the chief factor in moral training. However, there is a vast difference between knowledge and conscience, and moral education is impossible without discipline and careful habituation. But, objects the individualist, man should live virtuously for reasons founded on his own individuality, and hence the moral formation is a continuation and a perfecting of the æsthetical. However, if we regard man as essentially related to larger moral bodies, we must allow a greater distance between the beautiful and the good, and consequently also a greater distance between the educative forces and the moral. Morality and the mind are so variously and delicately intertwined with each other that it is difficult to see through the whole. Hence it is not sur-

[1] *Tim.*, p. 47.

[2] Cf. Seneca, *Ep.* 88, where he reviews the arts and finds fault with them because of their small moral value: we should be less concerned about the wanderings of Ulysses than about our own aberrations from the path of duty; we should attend more to the moderation of our wishes than to the measuring of fields and estates; we should think less about straight lines than about the straight path to be followed in life, etc.

[3] *Soph.*, p. 246.

prising that men, looking at the subject from different viewpoints, arrive at different conclusions regarding the individual factors and their reciprocal influences. However, for our present purpose of analyzing the aims of education it is sufficient to have established the fact that all divergent views meet in this point that mental culture must be co-ordinated with moral ends.[1]

The view that education is to make men better, presupposes that much thought has been given to the subject of mind and morality. Before arriving at this view men realized that teaching and learning are themselves moral actions. Among the ancients this latter conception gave rise to solemn forms of teaching and to the pupil's reverence for his teacher. The relations between the teacher and his pupils, between the master and his disciples, are frequently compared to the first of all moral relationships, that between father and son: the teacher is described as the second father who gives birth to the intellectual life of the pupil; he is deemed worthy of filial respect, and the ties between him and his pupil outlive the period of schooling and continue during all after life.

This reverence for the teacher springs, however, not only from the feeling of personal gratitude, but also from the conviction that the teacher is the administrator of intellectual treasures, and that he imparts these to the pupil in order to fulfill his duty with regard to conserving and transmitting the intellectual heritage of the race. This view is not peculiar to the ancients, but represents a universal motive in education, though certain other factors may at times overshadow its importance. The subject-matter of teaching and learning is not a mere instrument with which we may produce certain results in the individual. On the contrary, it has a value higher and other than a purely personal one, since it represents intellectual treasures that must be conserved by the race and transmitted to future generations. These intellectual treasures are indeed conserved in the human consciousness, but not in the consciousness of the individual, but of the whole human race; and the individual who receives part of them into his consciousness is doing his share of the common duty of all men by assisting to transmit to future generations the inheritance of mankind. This

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[1] In Discourse VIII, *Knowledge Viewed in Relation to Religious Duty*, of his *Idea of a University*, Cardinal Newman deals with the influence of knowledge on morality.

work is moral, but still different from the moral education of the individual; the latter is individualistic-ethical and the former is socio-ethical.

3. Looking broadly at the subject of education, without regarding its individual phases, one can not but perceive the socio-ethical motives influencing the educative process. These motives were more powerful among the Eastern peoples than among the Greeks, because the latter delighted in what was of their own creation and attended less to the conservation and transmission of what they had received from the past. Roman education, however, was deeply imbued with the socio-ethical tendency. "I reverence," says Seneca, "the discoveries made in the field of knowledge and the men who have there unearthed treasures of wisdom. I am deeply moved when considering that knowledge and wisdom represent, as it were, the heritage of thousands, and that all of it has been collected and prepared for me. But we will imitate the wise father of the family and increase what we have received in order to transmit to our children a still greater heritage."[1] The Roman felt himself called to share his intellectual treasures with other peoples, and hence he converted the achievements of the Greeks into boons of humanity.[2]

Christianity, being entrusted with the mission to conserve the heavenly gifts and to let all men share in their graces, was well qualified to give a new and deeper meaning to the socio-ethical motives of education[3]. The latter were almost the only motives that influenced the Middle Ages in transmitting the rich inheritance of the past.[4] In modern times, these motives have often been ignored; still, their influence has been felt. For even if the educationist contends that the ends of education are limited to the work to be done in and with the individual, still the world will go on believing that the schools are not only educational institutions, but also conservatories of valuable knowledge and art, and the organs for renewing life and its ideal gifts. There can be no doubt that such is the function of all higher schools. They are the homes of the sciences, the arts, and of all superior ability. They are not merely fitting schools for the learned professions, but are the servants of the whole

[1] Seneca, *Ep.*, 64.
[2] Vol. I, p. 161.
[3] Vol. I, p. 176.
[4] Vol. I, p. 236.

race: they must serve the interests of general culture and national life; must foster such studies as are necessary to maintain a high standard of intellectual life, and their curricula must be planned accordingly.

We admit that the lad poring over his Latin grammar does not realize that he is serving the interests of the commonwealth, and that he is actively engaged in connecting the past with the present and the future. However, the man who has mastered Latin will understand, to a certain degree, the relation between studies and national life, for he knows that the language of the Romans is even to-day a social factor whose disappearance might change all our actions and doings. The whole force of the socio-ethical tendency is felt when the value of some ideal boon is forcibly brought home to the consciousness of a people. When the generations of the Cosimos and Lorenzos were thrilled with the glory of the ancient world, then young and old, prince and peasant, men and women—all were actuated by the common desire to unearth the treasure and to make it the property of the nation and the race.[1] When the Germans had come to realize, in the beginning of the 19th century, the splendor of their nationality, they were, one and all, eager to imbue themselves and others with the new intellectual content: the child in the school realized that he was learning for the fatherland, and the university joined with the elementary school in fostering the rediscovered ideals of the nation; and these boons were regarded, not as instruments, but as ends of education. In such periods men recognize what they overlooked, perhaps, amid the drudgery of a workaday world, *viz.*, first, that learning, research, and teaching must co-operate in uniting by the bond of tradition the successive generations;[2] and, second, that the subject-matter of these various activities may not be adjusted arbitrarily to the subjectivity of the individual, but must retain a certain substantiality. This view is beautifully expressed by Grimm: "What has been transmitted from the past, may not arbitrarily serve our needs or the views of the present day; on the contrary, it is our duty to guard these treasures so that they may be handed down unimpaired and entire to the most distant future."[3]

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[1] Vol. I, p. 244.
[2] Vol. I, p. 317.
[3] In the dedication of his *Deutsche Grammatik* to Savigny.

CHAPTER V

The Transcendental Tendency of Education

1. It was to the gods that the ancients traced back the treasures transmitted by teaching and learning from generation to generation. To the same source did they trace back the virtues that are the objects of the educative process. Hence they were consistent in venerating the gods as the first teachers and the patrons of the sciences, the arts, and teaching in general. In the East, where the sacred traditions formed the teaching content, learning and instruction was part of the public worship. The Greeks worshipped Athene, Hermes, Apollo, and the Muses as the divine representatives of the content and ideals of education, and paid divine honors to Παιδεία. Pythagoras, Socrates, and Plato regarded the work of forming the human mind as something divine.

These views and practices were sublimated by Christianity, for it correlated all studies with Christian doctrine as the core-subject and subordinated the educative process, like all earthly things, to the God-given end of man. It teaches us to regard the mental faculties as gifts of God; and in our modern languages we designate them, as Christ did in His parable (Matthew, 25, 14 ff.), as talents (*τάλαντον*). Christianity considers "edification" (*οἰκοδομεῖν, ædificatio*) to be the capstone of the inner structure, and etymologically "edification" implies vaulting the intellectual life with the roof of a temple. In fact, the pedagogy of the Christian Middle Ages recognized neither the desire of knowledge nor its practical usefulness, but only the striving for Christian perfection as an educational motive, and consequently regarded all proper educational activity as divine service. Similar views were entertained in the subsequent periods: that knowledge can be acquired by no other means than by learning, practising, and praying, was the teaching of both Vives and Comenius; and the rule of the Jesuits that all subjects should be so taught as to lead to the knowledge and love of the Creator and the Redeemer, is based on the same principle as the "eloquent and wise piety" which Johann Sturm considered the end of education.

2. Even modern school regulations insist that the religious and moral training be one of the aims of the school. No convincing argument has ever been brought against the old view that if education is to develop the whole man, and not only

one or the other of his faculties, it must include religious instruction and religious practices. What a great historian has said of the influence of Christian ideals on modern science, is equally true of their influence on education: "Our age enjoys the pleasure of free movement in its intellectual work, but forgets too readily that these joys are a reflection of that splendor of the supernatural element which the Middle Ages infused into science."[1]

Infidelity has been mentioned as being the outstanding characteristic of our age. But this charge is unjust. "The true and abiding spirit of the present," says one who is familiar with both modern schools and modern life, "is not skepticism and infidelity. These have, it is true, taken hold of certain noisy elements and, therefore, appear on the surface to a dreadful extent, but they have, nevertheless, not affected those men who are solid and fully mature. The real spirit of the modern world is to be sought in the reawakening of the religious sense, and this is reasserting itself everywhere through the strong influence of the interests of the Church and of God. To ignore it...is to ignore, for the sake of the false and modern *Zeitgeist*, that deeper spirit of the age whose low murmurings are louder and truer witnesses than the fury of the noisiest civilization."[2]

The evergreen of religious consciousness will ever struggle bravely up from among the briars of the materialistic and autonomistic opinions of the day. Serious-minded thinkers of the modern world have often given apt expression to the deeper meaning of this religious spirit. Eucken confesses: "Modern education can not, despite its splendid achievements, satisfy the cravings of the human heart, and some inner power forces man to seek in an eternal Being and an infinite Love the peace unspeakable and the salvation of his soul. To express this longing we turn to the words of Peter, 'Lord, to whom shall we go? Thou hast the words of eternal life' (John VI, 69)."[3] Fechner, the founder of psychophysics, says, "Take prayer out of the world, and the bond between God and man shall be torn asunder, and the tongue of the child, telling his needs to his heavenly Father, shall be struck dumb."

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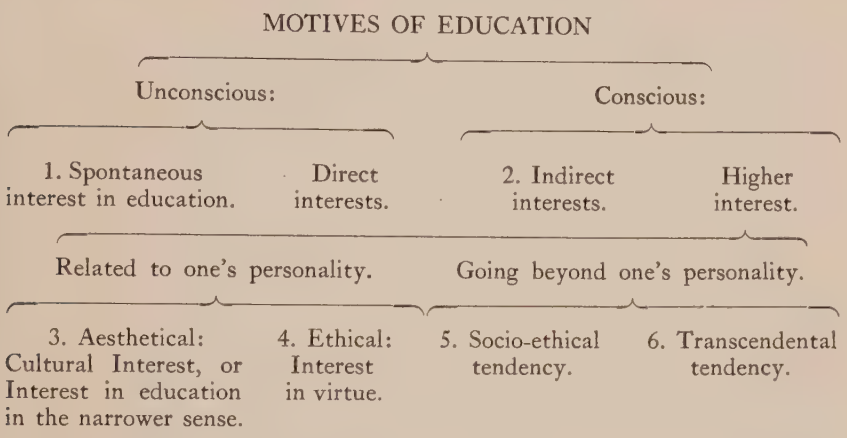
[1] J. Burckhardt, *Die Zeit Constantins*, 2nd. ed., p. 385.

[2] Otto Frick in the article *Simultanschulen*, Schmid, *Enzyklopädie*, VIII, p. 677.

[3] Rudolf Eucken, *Die Lebensanschauungen der grossen Denker*, p. 174.

3. The following diagram visualizes the results of our analysis:



The spontaneous interest in education (or the instinctive impulse to learn and be active) is aroused by the inherent charm of the intellectual content. The indirect, or practical, interests view this content as a means to an external end. The cultural interest regards it as the artistic material to be employed in the inner formation; and the individual-ethical interest regards it as material for moral formation. The socio-ethical interest considers the intellectual content of education as a good that involves common duties; and the religious interest considers it as a gift from God to be used for God's glory. The spontaneous and instinctive motives are related to the æsthetical tendency, *i.e.*, the unconscious and conscious desire of education in its proper sense. The indirect and practical interests are related to the socio-ethical tendency in so far as this tendency and the indirect and practical interests are both co-ordinated with life and society. The indirect and practical interests are co-ordinated with life and society in an egoistic sense, while the socio-ethical tendency regards the obligations connected with the moral gifts of life and with the communities that possess them. Hence the indirect and practical interests may, in opposition to the socio-ethical interests, be described as socio-egoistic motives. The moral and religious motives inherent in education make it a powerful force for civilization and refinement. But the specific character of education consists in the spontaneous or conscious tendency to form and inform along intellectual lines.

II

EVALUATION OF THE AIMS OF EDUCATION

CHAPTER VI

The Moral Principle as the Standard

1. The educational motives and aims, which we have examined in detail, have been effective in different degrees of strength and in different combinations in the various periods of the history of education, and many have been the opinions advanced by laymen as well as by educationists regarding their respective value. However, there is one point that may not be disputed, and hence it is the proper starting-point in evaluating the aims of education: whether the aim of education is purely practical and utilitarian, or whether the full and harmonious development of man's faculties is regarded as the goal, whether the educational aim is of this world or of the next—there is one principle that may never be questioned; *viz.*, that the educative process must be a moral process and that it must be moral in its results; that it must make man morally better; that the increase in knowledge and skill must perfect his royal faculty—the will. Progress in knowledge without a corresponding progress in moral power is no gain, but a serious loss: "*Qui proficit in litteris et deficit in moribus, plus deficit quam proficit.*"

This moral end must be the standard for evaluating all educational aims, whether practical, æsthetical, or instinctive. The categorical imperative: thou shalt become a better man by means of learning and studies, must determine in how far we may enunciate the hypothetical imperatives: thou shalt follow thy inclinations to mental growth; thou shalt inform and form thy inner nature; thou shalt equip thyself with knowledge and skill for the needs of practical life.

The instinctive impulse to know, to learn, to imitate, to be active, is like a force of nature that must be brought under control before it will serve man. Education needs the aid of this instinctive impulse. "*Amor docet musicum*," says the old

adage. Pliny's words, "*amor magister est optimus*,"[1] represent the spontaneous interest as the chief factor in teaching. Mediæval pedagogy erred in regarding the impulse to learn as vain curiosity. Still, the educative process would be degraded if it were controlled exclusively, as Rousseau's naturalism demands, by the spontaneous impulses and tastes of the pupil. The natural interest in objects and knowledge may not degenerate into playing with the values that are the products of serious human endeavor: our schools should not encourage educational *gourmets;* and our pupils should not be taught to regard their studies as an *amusement d'esprit.* On the contrary, the spontaneous element found in every impulse, even in that directed upon intellectual materials, must be controlled and ennobled by voluntary and moral aims. "What would all education amount to," asks Goethe, "if we did not control our natural impulses?"[2] And he considers love the proper complement of the interest in knowledge: "Fact and fiction, presented in a thousand books, will remain but a tower of Babel unless they are connected by the bond of love." Herbart assigned to each of the two factors, *viz.*, the instinctive impulse and the moral element, its proper place in the field of education: the instinctive impulse is to be cultivated like a fertile field that is rich in germs, roots, and seed; but the crop of the field is to be stored in the ideal centre of personality, the moral character.

But even if the maxim, "Learn and do what pleases you," is exchanged for the other, "Learn and do what will make you agreeable to others," there will still be need of emphasizing the moral ends. The pleasant, the agreeable, the beautiful, may lead to the good, but is not itself the good. Self-conscious activity, even if ennobled, will contribute to true education only if made subservient to moral ends. The tendency to make knowledge and skill a personal property and to employ them for the expression or ornament of self, savors of egoism, and, unless it is controlled by moral aims, it produces the affectation of the æsthete. The *bel esprit* is, indeed, open to all that is interesting and stimulating, and also assimilates it to a certain degree. Yet he delights more in many-sided activity than in the object of this activity, and finds more pleasure in the elasticity of his mind than in filling it with valuable and fruitful knowledge. When the cultural virtuoso turns to the creations

[1] Pliny, *Ep.*, 4, 16.

[2] *Conversations with Eckermann* of May 2, 1824.

of human genius he enjoys these less than the exercise of his mental powers, and his sole aim is to discover matter for promoting his intellectual growth and to find opportunities for the display of his ability. Hence the beauty of the soul is a deceptive principle for one's inner formation and is not adapted to promote concentration and depth: the measure and harmony of the inner life must be founded on a more solid basis than is afforded by the intellectual life alone.

To oppose these false tendencies in education is the function of the moral aim. The moral aim gives us a higher and more serious view of the instruction in the arts and sciences, and leads us to recognize that the study of the sciences gives us the disciplinary training of the true, and that the study of the arts gives us the disciplinary training of the beautiful. No intellectual effort should be confined to the service of the subjective mind, for the sciences as well as the arts represent what is objectively real, and to this the subject must adapt itself. Learning and practice discipline the mind, not only by demanding regular and systematic efforts, but also by forcing the mind to follow the lines of what is objectively true or beautiful; and thus this second effect on the operations of the subjective mind is akin to the effects of customs and the moral law on human desires and impulses. Furthermore, the devotion to the true and the beautiful is in its nature as unselfish as the moral sense, and this unselfishness counterbalances the egoistic tendency of the inner formation. Finally, if moral ends inspire the educative process, there is no opportunity for boasting of educational perfection, and that for two reasons: first, because the object in view is not a self-appointed goal, but the sum-total of the intellectual treasures of the race—of which, at best, but a part can be appropriated by the individual—and, second, because man's supreme, eternal end, included in the moral aims, demands other efforts beside the intellectual work.

2. All practical aims of education imply, like the purely æsthetical tendency, egoistic motives, and it is only on moral grounds that this selfishness can be squarely met. The Greeks spurned the training for practical ends and material profit as degrading and unworthy of the free man. Christianity corrected this view by conferring a peculiar dignity on labor and by ennobling the training for the mechanical and learned professions. Still, even we are wont to speak disparagingly of purely utilitarian studies. But we find fault, not with the practical aims

as such, but with the narrow mind that refuses to recognize any other than practical ends, and that evaluates the educative process according to its returns in dollars and cents. Though we may demand that higher motives, *viz.*, the general end of education as well as the consideration of its power for developing man's native faculties, should supersede this exclusively practical tendency, still it is only the moral end of education that can correct the fundamental mistake of narrow egoism. The maxim, "Learn what is educative for you," may be opposed to the following, "Learn what you will use and need;" but the latter will not be superseded by the former until we recognize the third maxim, "Learn what will make you generally efficient." This general efficiency, indeed, includes any special proficiency; but while striving for it we shall not be narrow egoists who are intent on worldly success alone. The egoism of the utilitarian educationist and the egoism of the æsthete can both be corrected by applying one and the same principle: the truly useful and the truly beautiful meet in the good; the moral purpose broadens the horizon of the utilitarian, and harmonizes and unifies the diverse aims of the æsthete.

But the egoism of ambition, the striving for honor, must be controlled even more by the moral purpose, else it will undo the work of the educator. It is comparatively easy to arouse the pupils' ambition. In their eyes, school honors are more concrete than any future usefulness of the knowledge to be acquired. They will readily appreciate the honor of the first place in their class, or of a high mark in their oral or written task: it is something whose value is seen in the present and not merely to be hoped for in the distant future. In this matter they may even be encouraged by their teacher, for there is no school teacher but is tempted to appeal to the ambition of his pupils, because for arousing their best energies this method is more refined than corporal punishment and superior, too, in its results. The rod will, at best, prove only a cure for sloth, but not a stimulus for enthusiasm. However, from the moral viewpoint it is superficial to measure the efficiency of any pupil by his superiority over his classmates, and to measure his application by his success in outstripping his fellows. True, the naturalism of ancient ethics never went beyond this view, and the extensive study of the ancient classics has somewhat infected our modern teachers with a false evaluation of honor. Moreover, many educationists —and not only such as are admirers of ancient education, but also certain educational leaders of the Enlightenment—approve

of emulation in the classroom. Locke, for instance, considers emulation "the great secret" of education, and Lessing describes the "thirst for honor and the craving for the novel" as the "motives that urge man to arrive through his own thinking at truth."[1]

But the Herbartians have rightly drawn attention to the fact that the fostering of ambition deteriorates the work of the school. Make emulation the chief motive in education, and the pupils will never conceive a direct interest in their studies, and the disinterested devotion to a subject will either not be learned or will be unlearned. The external is thus made of chief moment instead of the internal, the work accomplished will receive more consideration than the will and intention. The individual will be measured, not by his own standard, but by the standard established by the work of others; he who is quick and clever, will be considered superior to him who is, indeed, more efficient, but slower in his work or less dexterous in the use of a given opportunity; the successful pupil will be filled with pride and conceit, while the pupil who failed will grow jealous or discouraged—perhaps for life. There can be no doubt that the teacher must individualize in order to bring out the individual powers and to develop the faculties of the different minds; and he must individualize, if ever, in evaluating the work and progress of his pupils. The objective standard (least of all, if established by the work of a fellow-pupil) will not suffice, but must be complemented by the subjective and moral standard: the teacher must examine how much progress in the moral and intellectual development of the individual any work accomplished represents. It is here especially that the teacher must stress high aims and moral purposes. The emulation of the pupils must be divested of its odious element of egoism. They must be guided, as Plato says, not by the hard, iron rule of cupidity, but by the holy, golden law of moral insight. The teacher must impress upon their minds St. Paul's conception of honor: "Let everyone prove his own work, and so he shall have glory in himself only, and not in another."[2]

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[1] Locke, *Some Thoughts on Education*, § 56 ff.; Lessing, *Literaturbriefe*, 11.

[2] Gal., VI, 4.

CHAPTER VII

The Socio-Ethical Principle

1. The instinctive impulse for mental work, the longing for inner formation, the tendency to acquire practical skill—all these are legitimate motives of education so long as they do not check, but further, moral growth. But neither the theory nor the practice of education may be satisfied with the individual-personal form which morality takes in the concept of virtue. Morality must certainly be the centre in man, but man is not the centre of morality. It is not enough to cultivate the seeds of the good found in our own hearts: we must strive to receive in our inner nature the pure and full effects of both the good and the treasures possessed by the moral communities. There is still an element of egoism in the efforts made by the individual mind to develop its powers; and the self-sufficient wise man, the æsthete and the self-satisfied just man are all actually cultivating but a refined and sublimated kind of virtuosity, which is far removed from the whole *virtus*. To overcome this selfishness, we must do more than obey the impulses of our better self; we must place ourselves whole and entire at the service of a higher and super-personal order; *i.e.*, we must raise the individual-ethical conception to the socio-ethical and transcendental view.

To moralize the socio-egoistic tendency we must examine it on its own grounds. Its watchwords are: practical aims, the needs of life and the professions, social rank and position. But these watchwords can not be judged aright—and therefore can not be corrected—from the viewpoint of individual ethics. To attempt to correct them from this viewpoint would but bring out more strongly the opposition between school and life, between general education and vocational training, between humanism and realism, and would ultimately lead us too far afield and away from present-day educational conditions. Though the individualistic aims may contend that instruction should develop a broad humanity in every man, should assist in the harmonious development of all his faculties, and lay a moral foundation for a many-sided mental life—still these claims do not disprove that the interests of society at large, its system of labor, and the production and exchange of goods must likewise be taken into consideration. The socio-ethical principle, however, does not interfere with these interests, with this labor and these

goods; but it rightly insists that there are also higher than purely material interests at stake, that our daily needs are not our only needs, but that we have also a higher task of providing for the common welfare of the nation and the race, and that there is besides the production and distribution of material goods also a production, transmission, and distribution of intellectual treasures. The schools should, indeed, serve the interests of life; but life must be conceived broadly enough to include the intellectual treasures of the nation and the race, for these constitute the permanent and ideal elements of life. The schools should take cognizance of the realities also; but the real must not be confined to what is perceptible to the touch: all that is effective is real, and hence the factors of the national and racial consciousness are also realities. Consequently, the educative process should pass from the sphere of abstract humanity into the service of concrete human society. A school which would aim only at the harmonious formation of the mind, at stimulating the mental powers, etc., "would turn out such colorless and soulless graduates as would require a rigorous training in the school of life before they would be fit to take up their life work. Such a school would spread broadcast over the world blank leaves of a book on which life would first have to write a legible and intelligible text."[1] It is only proper that the school write the initial letters of this text; still, life should allow that some of these initial letters be illuminated, for though this illumination does not make the text more legible nor more intelligible, it shows the reverence with which the writer regards the book and its contents.

2. The socio-egoistic conception regards vocation as the position occupied by the individual in his struggle for existence; and to fit oneself for holding this position and for using it to the best possible advantage, is its view of the aim of education. But the higher, ideal view of education, as expressed in Humanism and allied movements, must reject this narrow conception, and justly demands that the head and the heart be developed in keeping with the high dignity and capability of man. However, even this view fails to rectify the narrow conception of vocation, which it regards as diametrically opposed to its own principle. This is one of the evil effects of the ancients' scorn of all service

[1] Scheibert, *Das Wesen und die Stellung der höheren Bürgerschule*, Berlin, 1848, p. 7.

and of their jealousy of the dignity of the free man. But the socio-ethical conception corrects the mistake that is the ground of the quarrel: the vocation—originally a religious conception, the κλῆσις, *vocatio* (I Cor. VII, 20), the calling of the individual to fill his appointed place in the whole—implies no opposition at all to truly human activities, but is their social basis. The vocation implies more than the round of one's daily duties: it implies the circle of the duties and activities of one's whole life. "To educate a man for his vocation is, not to train him for a certain kind of work, but to enable him to seek vital relations (*Lebensbeziehungen*) in his own sphere, to seize such as are within his reach, to hold fast to them when once established, and to devote himself to them all."[1] To connect what is specific in one's vocation with the generic, to spiritualize, or, if one may use the term, to humanize the material work of one's vocation—this is the test of real education. Hence it is not wholesome for the cultural pursuits to be confined to one's leisure and to constitute a special circle of thought, while the vocational work is the burden of long working hours. The two spheres should rather be organically combined: the cultural pursuits should be co-ordinated with the vocational duties, and the latter should be lightened by the former. There is no harm in a man's culture being colored by his vocation so long as his vocational work savors of culture.[2]

3. The socio-ethical principle is, from the viewpoint of the individual, super-personal and transcendental, and, consequently, leads to a still higher plane, to the infinite and eternal. This viewpoint of the infinite and eternal is essential to a complete and final evaluation of the educational aims. We must examine education, not only in its bearing on human life and endeavor, but also in its highest and broadest relationship, *i.e.*, that relationship which faith, the complement of science, establishes between all existing things.

As difficult as it is to ascertain the media of intercommunion between mind and morality,[3] so difficult is it to analyze psycho-

[1] Scheibert, l. c., p. 11.

[2] Lazarus, *Leben der Seele*, (2nd ed., Berlin, 1876) I, p. 31: "All scientists and representatives of the learned professions are interested, not only in general knowledge, but also, and that primarily, in some special subject... Of course, the professional man must therefore labor primarily in his special field; but lest he grow narrow and one-sided, he must extend his work so as to include some part of all the fields touching upon his special department."

[3] Cf. *supra*, ch. IV, 2.

logically the interrelation between man's longing for the transcendental and the supernatural, on the one hand, and his attachment to the sensuous and the finite, on the other. All ideals are inspired, either consciously or unconsciously, directly or indirectly, by the striving for the transcendental and the supernatural. The moral striving, the search after truth, the impulse to produce and create—all these are attended, if not by the clear conviction, then at least by the subconscious perception, that they are directed upon something that has not been wrought by man, and that must remain a riddle, unless faith discloses its proper place in an eternal order of things. It is true that an exclusive attention to the supernatural may produce those hard and rigid forms of intellectual life that characterize priestly culture and education. But it is not true that breaking the bonds that connect man with the supernatural, promotes the cause of education. On the contrary, infidelity is, even under the most favorable external circumstances, intellectually sterile. "All periods in which faith, in whatever form, reigns supreme, are splendid; they elevate the heart, and are fruitful for contemporaries and posterity. But all those periods in which infidelity, in whatever form, holds the day—though such periods may for a short time gleam with a borrowed light—are ignored by posterity, because no one will trouble himself with something that is barren of results."[1] It can not be said that temple precincts and monastery gardens have been remarkable for exuberant culture. Yet these holy places have been the nursing ground whence sprang such fruits as contained seeds of strong germinating power; and these fruits nourish the periods that rejoice in a wealth of the choicest flowers.

4. Scripture says, "The fear of the Lord is the beginning of wisdom," and the fear of the Lord is likewise the final point at which the inquiry into the intellectual values arrives. In the light of this text we can best determine the true value, whether absolute or relative, of the different educational motives. In the light of this text the socio-ethical motives are strengthened and deepened, because the moral communities are regarded as divinely established institutions, and the duties towards them appear as a part of the larger duty: to respect what the Lord has ordained. Christianity has revived and given a deeper meaning

[1] Goethe, *Alt-Testamentliches* in *Noten und Abhandlungen zum west-östlichen Diwan*, Ausgabe letzter Hand, VI, p. 159.

to the idea of vocation by conceiving it as implying membership in a large spiritual body.[1] With such a religious consideration to guide man, there will be little danger lest his striving for moral perfection result in self-justification and pride in virtue attained; neither will the tendency to refinement lead to self-gratification and playing with cultural values; the disciplinary value of truth will be fully realized, for the doctrines of faith will be the centre of all knowledge, and this centre, being removed from the errors and follies of men, will teach the wholesome lesson that God, and not man, is the measure of all things. Greatness and power will lose some of their charm in the light of the fact that all earthly goods have but a relative value, and that the idolizing of them will entail the eternal loss of the soul. The eagerness for many-sided learning and activity will be tempered by the conviction that true peace of soul can not be enjoyed amid ceaseless striving and yearning.

The fear of the Lord is the beginning of wisdom. This wisdom ennobles man so that his knowledge and skill serve the interests of morality and virtue, and on this account this wisdom must be the goal of all efforts tending toward the humanization and spiritualization of life. The spiritualization of personal life is the *condicio sine qua non* for humanized co-operation in the various fields of human endeavor; and the serious character of work must control and direct the impulses to know, to learn, and to do.

[1] Vol. I, ch. XV, 1 and *supra*, p. 34.

III

THE IDEALS OF EDUCATION

CHAPTER VIII

The Presuppositions of the Educational Ideals

1. Our teleological analysis has led to the discovery of a number of educational motives and aims, and though they may be examined separately and individually, yet they can not be understood as real and efficient factors of one's consciousness until they are again joined in what was their original union. To obtain a complete view of any truth, we must receive it first in the gross, then notice it in detail part by part, and finally grasp it once more in its entirety by an intelligent synthesis. Every analysis of something living, whether of the organic or the moral world, has the real object of its inquiry, not before, but in back of itself; and hence we must, after having finished our analysis, reunite by a synthesis what was separated by the analysis.

There is a great diversity in the way in which the educational motives and aims co-operate in one's consciousness, as may be seen from the various historical forms of education described in the first volume of the present work. Here, however, we shall content ourselves with a general and psychological distinction, based on an examination of the more or less perfect synthesis of the factors to be considered. The combination of different impulses, ends, and aims may result in a mere synchretism; or it may also develop into a perfect synthesis, a pure and harmonious union. In the first case we should have a more or less pronounced educational tendency; but in the second case, an educational ideal.

Ideals are living and life-giving pictures of a state in which a tendency has attained its end, a striving its object, a struggle its reward. An educational ideal is a picture which rouses one's energy and encourages strong effort by representing such a state of intellectual and moral perfection as will reveal the fullest and purest results of the educative process.

2. The development of educational tendencies into educational ideals depends on several conditions. The educational tendency (*Bildungstreben*) must deal with a certain content and must be regarded as a special field of activity, before its objects can be regarded as ideals. Furthermore, the tendency must have been the subject of some thought, though the ideal itself is the outcome less of reflection than of an intuition which is akin to the intuition of the artist; but the evaluating reflection must prepare for this intuition. Finally, a personal element must be added in the form of intelligible and tangible types: men of brilliant attainments must be set as signposts along the road to indicate the direction to what is best in education. This personal element is needed in all ideals, but is a special requirement in educational ideals. There can be no type of idealized mental culture without strong and striking personalities serving as models: *i.e.*, celebrated teachers, great masters, harmonious natures, in a word, such men as unite in themselves what is scattered in the consciousness of the race.

The character of the educational ideals is determined in part by the other ideals cherished by the respective people or age. Men will imagine the personal embodiment of the concept of education according to what they demand of the representatives of the higher life—the wise man, the research worker, the poet or the artist, the perfect gentleman, the nobel lady, the man of honor, and the zealous clergyman. Their educational ideal will show traces of all these types, and these traces will vary according to the tendency of the age; and one might well characterize the historical ideals of education from the viewpoint of this elective affinity. But even in one and the same age we may discover varying types of educational ideals: the scientific investigator will pursue a somewhat different educational ideal than the artist, the gentleman, or the man of practical affairs.

The material element is a second influence in shaping the character of the educational ideal. The latter is not created by first conceiving a model picture and then looking about for the material to realize it. The content and the form are developed simultaneously; the favorite studies and occupations determine the final shape of the ideal as well as the subject-matter of the teaching in the schools. To describe the educational ideal of any age, it is invariably necessary to touch upon the educational content of that age, especially because the latter often furnishes the name for the characteristic traits of the ideal: Greek edu-

cation may be called liberal-gymnastic; medieval education, Scholastic; and Latinity is the main feature of the Renaissance ideal.

3. There is an interaction between end and means, just as between matter and form; and educational institutions are not established after the complete development of educational ideals, but influence them in their first growth. For example, the educational tendencies of the Middle Ages are responsible for the universities, and these in turn contributed their goodly share toward the shaping of the ideal of medieval education; the ideals of the Enlightenment were born of the movements and influences springing from the salons and social circles, and these themselves owed their existence to the need of enlightenment felt by the age. In fact, educational ideals always show the traces of different influences springing either from schools or social organisms; and we might well divide and describe the educational ideals, particularly of modern times, from these points of view.

Besides the educational institutions, the prevailing theories of education also assist in shaping the ideal of education. The science of education either formulates in exact statements what the consciousness of the respective period regards as a model of educational conditions, or goes beyond the prevailing views and voices future aims. This practice of educationists detracts generally from the clearness and even the fullness of the ideals. The formulas of educationists can not express adequately the ethos and content of educational tendencies; they either select only the striking characteristics, which are moreover often opposed to one another or ill-connected, and leave their exposition to the actual observer, or express their demands in certain watchwords, such as humanity, piety, harmonious development, etc. But these very watchwords are likewise unintelligible unless one knows from other sources what meaning was attached to them by consciousness of the respective period. Though all this proves how vain it is to attempt to define what can by reason of its nature be only described, and though these abstract and ambiguous terms work some harm, yet it can not be denied that educational theory has steadily been growing into a more and more important factor with regard to shaping the educational ideals. There is a similar tendency in the fine arts, and the studies in art theory have begun to influence the ideals of artists; and though this shows some weakness in the artists' creative power, still it is but a necessary result of extending the boundaries of intellectual activity.

CHAPTER IX

The Distinctive Characteristics of an Educational Ideal

1. What appears most conspicuous in the type of an educated man, is a series of intellectual qualities. The man of education must be a man of knowledge, and must have passed through a course of intellectual schooling. But his knowledge may not be a dead and cold element, whose absence would not change him materially: he must have a ready command of his knowledge; it must be an element or leaven of his life. While the educated man must thus have solid and systematic knowledge, he must still keep his mind open to receive additional information from such sources as reading, conversation, the arts, etc. His many-sided interest must prevent narrowness as well as rigidity in his mental activity. His knowledge and schooling must make him mentally alert. The fruit of his schooling must appear in the sureness of his understanding, reasoning, reproducing, seeking, and finding; but his knowledge should not smack of the schoolroom, *i.e.*, he should carry no burden of knowledge that is merely crammed, and which he can not, therefore, freely control.

The truly educated man knows enough to realize that his knowledge is imperfect. He has seen enough of science to realize how little of it he has really made his own. Hence he will make use of every opportunity to listen, to learn, to put questions, and to test in his own mind the truth of the answers. But though his mind must be on the alert, it may not be restless; his many-sidedness must not tempt him to dabble in every field; he must strive to combine an interest in all knowledge with inner harmony. He must be a man of general education; and this general education must, unlike scholarship—which may draw upon the most remote ages—derive its content from the present. Still, what is merely fashionable in life, in customs, in art and science, should remain on the outside, and not fill the soul of the educated man; for in his soul only that which is permanent and above the changing caprices and whims of the world, must hold sway. The educated man must be convinced of being a link in a long chain of historical, social, and transcendental associations; and this conviction will preserve him from becoming a plaything of the day, "a fool of time."

The truly educated man is enlightened. He knows that the traditional is not good *because* it is traditional, *i.e.*, handed down from the past. But he knows, too, that the new and novel

is not good *because* it forces itself upon his attention. He knows clearly what gives true value to human things, and from the kaleidoscope of life and history he selects the true values. His whole nature, and not his understanding only, is enlightened; his busy mental activity has dispersed the fog of uncertain feelings, and has done away with sentimentality.

As the educated man can find the right equation between the past and the present, so he is also able to pass fair judgment upon the demands of cosmopolitanism and patriotism, for he knows that the appreciation of foreign excellence is not incompatible with the love of one's native country. "The educated man is like a ship with a good anchor on board sailing from the home port out upon the high seas; it carries goods to all ports and in return brings home goods from every corner of the world, and it is just as ready to give as to receive."[1]

Goethe could well describe what he prized so highly—harmonious education—and has summarized the intellectual traits of the educated man thus:

> "Widening world and broadening life,
> Years and years of toil and strife,
> Ever searching, ever founding,
> Never closed, but often rounding,
> Clinging to the tried and true,
> Kindly welcoming the new,
> Cheerful heart and purest aim—
> Something, methinks, should come of this."

2. There is a kind of sterile learning, which is a mere hoarding up of intellectual treasures. But education demands that these treasures be elaborated and utilized to their fullest extent. This demand leads us beyond the intellectual side of education, for the utilizing of a content involves a spontaneous element that is different from the receptive. Schleiermacher rightly distinguishes receptivity and spontaneity as the two main factors in mental growth, and regards world-perception (*Weltauffassung*) on the one hand and self-expression on the other as their culmination. A healthy mind responds to the impressions received from the outside world and reacts upon the influences received from others. Man can not form his inner nature without forming what is outside of himself; the educated man is not only self-formed, but also a former of other materials. The intellectual element must be supplemented in the first place, not by

[1] Döderlein, *Was heisst Bildung?* in his *Reden und Aufsätze*, I, pp. 159-175.

the practical, but by what Aristotle assigns to a middle place, between theorizing and acting, θεωρεῖν and πράττειν, *i.e.*, making forming, creating, ποιεῖν, the artistic, form-giving, or creative, element. This creative element extends beyond the practice of the arts, and the first subject that it deals with is language: the mind is naturally more interested in the word, which is its medium of expression, than in the outside world. Thus it is not surprising that the mastery of language, the *fari posse*, has occupied so important a position in the educational ideals of different periods. Neither does the fact that this element degenerated into artificial word-mongering disprove its original importance. The older conception of the *fari posse* is unfamiliar to us; but Rückert's exposition of the idea appeals to the modern mind:

> "Your calling, scholars, and your lifework are:
> Express what you feel; present what you are.
> For all the world is struggling for expression here
> And speaks obscure to men—'tis yours to make it clear.
> Yours to enlighten the dark and show by learning's light
> How things were beautiful could we but see them right."

What the educated man can express is in one regard himself, and in another regard the value, the meaning, the purpose, the beauty of things. The educated man expresses himself, but is at the same time filled with a content and bound by a form which are determined by the conception of beauty. This relation to the beautiful and the subordination to its laws prevent his self-expression from degenerating into what would be mere play or something purely subjective.

As the knowledge of the truly educated man stands midway between unsystematized encyclopedic knowledge and narrow specialization, so his practice of art is also equally far removed from frivolous dilettantism and technical professional work. He is interested in technique only in so far as it is required for mastering the elements of art, and practices the fine arts only in order to learn to appreciate and enjoy the works of the great masters. But he, nevertheless, claims for himself the freedom of an amateur, for he studies several of the fine arts, but only so much of each as he needs to be able to compare the various languages in which they express the beautiful.

3. However, the self-expression of the educated man is not confined to the arts. The rich intellectual content which he possesses seeks to be expressed in divers ways and to affect the most diverse materials. It is a fact that education influences

all phases and conditions of life. It modifies our forms of social intercourse and our manner of living—from the care of one's person and dress down to the furnishings of one's home. Customs and manners generally tend to refine human life, and it is the function of education to give a deeper meaning to these things. The fruits of education in this respect are tact, taste, individual adjustment to any given condition, polite manners, and good breeding. Cultured conduct is more than correct conduct. Wealth and a knowledge of the prevailing fashions will not suffice for furnishing a home to meet the wishes of a man of education and culture.

Thus education appears as an informing principle, for it determines the form of all knowledge, of all skill, and of all conditions of life. Hence we must recognize universality as a characteristic trait of education, *i.e.*, education must be many-sided enough to include all the varied interests of life. It must unite all the various impulses, tendencies, and activities in one great whole, and must harmonize the apparently disagreeing voices.

But of still greater importance than the harmony in this sense is the harmony that must be established between education on the one hand and the individual's ability and position in life on the other. In a healthy inner formation "the chief natural talent is the centre of the crystallization about which the intellectual growth crystallizes in rays, and thus the ground-plan of the development is established. All formations adapt themselves to this ground-plan, but some parts or sides may stand out more prominently, while others may show at the most but the beginning of growth."[1] If the education, however, is not adapted to a pupil's native gifts, it will ever appear as something forced upon him, as an inorganic appendage, but not as a healty growth. Hence the content of education must, first, be adjusted to the pupil's native gifts; and must, secondly, be distributed over such a course of study as is likewise in keeping with those native gifts. In this way the old adage: "In uno habitandum, in ceteris versandum," will be observed. From this point of view the educated man is like "the traveller who makes a brief call at one place, takes only a meal at another, but spends entire days at other places; some objects he scrutinizes carefully; at others he merely glances; but having returned home, he takes up his permanent abode in his own house."[2]

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[1] Hauber in the article *Bildung* in Schmid's *Enzyklopädie*, I, p. 661.
[2] A saying of Nicholas of Damascus; cf. Vol. I, p. 133.

There must also be harmony between education and the position that one occupies in life. The man with a vigorous mental life must have found the resultant between the broadness of general studies and the specialization belonging to his particular calling. The cultural interest, if it is not fused with his vocational interest, is a mere addition, but no vital element. And his vocational work, on the other hand, if deprived of the refreshing and ennobling influences of general culture, can not be truly free and humanized.

4. Vitalized knowledge and humanized skill are the manifestations of an educated nature. However, if they are not controlled by a strong and pure will, they will be but counterfeits; for real education there can not be without a moral will. To prove truly valuable and to give real value to a personality, the elements of knowledge must be converted into settled convictions and habits of mind. The mastery of form and the ability to create must, above all, stand the test of being capable of forming the raw material of man's impulses and passions and of establishing unselfish relations with his fellowmen. Thus moral elements must also enter into the educational ideal, though they are, admittedly, less conspicuous than the other factors previously mentioned. These moral elements may be likened to the foundation of a house: being buried in the ground, it is not open to view, yet supports the whole building, and its inestimable service will not be fully appreciated until it has once prevented a storm or a flood from carrying off the superstructure along with its columns and pillars, its beams and roof. Ignore the elements of morality, and restlessness and emptiness of spirit shall be the penalty: Goethe could discourse knowingly and eloquently on intellectual and artistic culture, yet he had to confess that occasionally his soul appeared to him to be a pandemonium or an empty vault.

The virtues of wisdom, of self-control, and of justice will naturally lead our discussion into the sphere of morality. Wisdom, the first of these virtues, rests upon a deep insight into things, wide experience, knowledge of life, prudence in acting; and all this must be controlled by a pure and kindly mind. Wisdom renders our educational efforts serious, deep, and pure, and teaches us to strive for what is truly needful in life. The second virtue, *i.e.*, self-control, is the use of reason to control the impulses, passions, and feelings; it is the foundation of all inner harmony, of the free activity of man's higher faculties, and of the true beauty

of the soul. It is the star which directs us to attend to our inner nature; it calms our feelings and passions, and is an indispensable condition for peace of heart. It preserves man "from the dangerous error of resting satisfied with the counterfeit education that is composed of the scum of intellectual life; it impresses him with the necessity of struggling with the elemental forces of nature, as being the only way for the soul to pass out of darkness into light."[1] Finally, justice, being the virtuous determination to give every one his due, checks egoism, and thus is the foundation of the whole social order. All relations existing between men presuppose justice, but the inner growth needs it no less: a dishonest mind and an impure will are incompatible with a wholesome formation of the soul.

5. Morality rests upon the assumption that man subordinates his will to the higher order ordained by God; and religion teaches man how to impress this order and its Author on his mind and heart. In the mind that is both moral and religious, wisdom is supplemented by faith—the telescopic view of the supernatural world—and by hope, which is the longing of the soul for its eternal home. In such a mind justice, which gives everyone his due, is perfected in charity, for this follows the golden rule of doing to others as we would have them do to us. Such a mind will recognize evil as sin that estranges man from God; but will be assisted in the fight for righteousness by supernatural grace, and will thus convert the calm of self-control into the peace in God.

While looking for the distinctive traits of the educated man, we have gotten beyond education as such. But this was to be expected because of the interrelation of all idealistic tendencies. Passing through the Propylæa of the higher life of the mind, we have reached the Acropolis of the moral and religious soul. But standing on the summit, we perceive that ours is not the only way leading hither. Another path winds along the steep and rugged heights up to the same summit: the high-souled character, in which morality and religion join in beautiful harmony, may be acquired by other means than by extensive intellectual education. If you strengthen and purify the will you will attain the same end; and the results of this moral striving may somewhat atone for the absence of intellectual culture. Plato takes this view when he regards as educated all who can

[1] Hauber, l. c., p. 664.

harmonize their convictions with their desires, even if they can not, as the proverb had it, swim or read. But those who can not establish this harmony, Plato declares uneducated, though they be ever so clever and keen-witted.[1] The Book of Ecclesiasticus says pertinently, "How great is he that findeth wisdom and knowledge, but there is none above him that feareth the Lord; the fear of God hath set itself above all things."[2] The words of Ecclesiastes are even more striking, "Let us all hear together the conclusion of the discourse: fear God and keep His commandments, for this is the whole man."[3] All but the prejudiced will agree with Palmer when he says: "The most simple Christian whose egoism and materialism have been destroyed by the teachings of the Gospel, is an educated man; because Christianity will govern his thoughts, words, and deeds, and, by banishing from him all that is vile and low, will render also his external life beautiful and attractive."[4]

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[1] Plato, *Leg.*, III, p. 689.
[2] Ecclus. XXV, 13 and 14.
[3] Eccle. XII, 13.
[4] Palmer, *Evangelische Pädagogik*, p. 107; cf. Martindale, *The Spirit of Cardinal Newman*, New York, 1914, pp. 155-156.

IV

THE SUBJECTIVE AND THE OBJECTIVE FACTOR OF EDUCATION

CHAPTER X

Material and Formal View of Education

1. The inquiry into the motives, aims, and ideals of education has repeatedly touched upon the basic relationship existing between them; but this relationship demands special treatment. It may be expressed, according to the different points of view, either by subject and object, or form and matter, or force and material. Education is based on the formation of the inner nature and is, therefore, largely concerned with the subject (the pupil); but it is in need, too, of an intellectual content, of an object, which, because valuable by itself and for its own sake, is more than an instrument. Again, education aims at producing a certain form of intellectual life destined to assimilate diverse materials; but this form is itself established only by assimilating the intellectual life. Finally, the educative process creates and sets free strong forces; but true education can not be acquired unless these forces be occupied with mastering a given material, and this circumstance prevents the arbitrary use of one's powers.

The educational motives and aims, which we found in our analysis, regard this basic relationship from different points of view. The instinctive educational impulse is entirely taken up with the object, and is directly interested in the content of knowledge and skill. The socio-egoistic, the æsthetical, and the individual-ethical motives agree in this that they regard everything from the viewpoint of the subject (or the pupil) and view the educational content mainly as a means for growing in strength, refinement, and morality. The socio-ethical motives allow more scope to both factors, for they consider the content of education both as a means for promoting the common good and as the subject-matter for teaching; and consequently these motives regard education as a boon which must for its own sake be trans-

mitted to others. The religious aspect of education also takes the last view, for it deals with the transmission of the doctrines of faith and thus confers upon the whole content of teaching a certain substantiality: "Now faith is the *substance* of things to be hoped for."[1] The preponderance of any of these motives will focus the educative process upon either the material or the formal element, and one-sidedness in this regard will result in either a traditionalistic or a subjectivistic coloring of all educational endeavor.

But even regardless of all teleological differences, we may always discern in education a preponderance of either the subjective or the objective element. In acquiring knowledge the object is more conspicuous than in mastering an art (*Fertigkeit*). We speak of positive knowledge to express that its content is something real and objective, whereas the arts are named from a state of the subject: "art" is derived from the Latin "ars," and the latter from ἀρετή, *i.e.*, manly excellence, or, like the Latin "vir-tus," manhood. These expressions, however, exaggerate the actual differences, because even positive knowledge must produce a certain state in the subject and a certain quality of intellectual life; and the arts, on the other hand, likewise imply an adjustment to a definite content, *i.e.*, to rules and precepts.

The content to be acquired is more important in vocational training than in a course of general education, for here the partial growth in knowledge of individual materials is of less importance than the totality of mental growth. Yet neither vocational training nor general education admits of one-sided activity; the former must produce in the student certain qualities, such as the artistic sense, skill, cleverness, etc., and the latter must impart much knowledge of things.

2. The terms: teaching material, subject-matter of teaching, substance of teaching, imply that we look upon the content of education as something real and substantial, as something valuable and worth striving for; and the educative process is in this regard held to be complete when a certain definite something has been acquired by the pupil.

But when speaking either of educational instruments (*Bildungsmittel*) that are to assist in nourishing the human mind and in fostering its growth, or of cultivating or building up one's inner nature, we have in view a state of the subject that is to

[1] Heb. XI, 1.

be realized by using the teaching content as a means; and hence the teaching material is here considered as a mental food of the subject. This latter conception was familiar to the ancients; Cicero speaks of the study of philosophy as being an "animi cultus et quasi quidam humanitatis cibus;"[1] and styles the study of nature "animorum ingeniorumque naturale quoddam pabulum."[2] The Scholastic John of Salisbury[3] says that reading is analogous to eating, and that the repeal by Christianity of the Jewish food laws symbolizes the liberty with which one may now read the pagan authors.[4] Goethe describes, in his *Bekenntnisse einer schönen Seele*, the educational content as the material (*i.e.*, *materia*, ὕλη in the strict sense of the term) to be used for self-expression: "The whole universe lies before us like an immense stone quarry before the architect. To be worthy of his title, the architect must be able to erect at moderate cost out of those stones a building that corresponds to the original picture in his mind, and this building must be both solid and useful. All things outside of us and, I may say, even all things belonging to our nature, are but elements. But deep down in our nature lies the creative power which can produce that which is to be, and which allows us no rest until we have in some way created the proper object outside of ourselves."

Though this conception is suggestive of many new ideas, it is still not altogether correct, and Goethe himself refers to one defect when he says: "Education consists in receiving all that is offered just in the form in which it is offered." Consequently, what enters the mind from without is more than a mere element. The educational contents: languages, sciences, arts, religion, are more than building materials or foodstuffs to be elaborated by the formative power of the subject. Every educational content possesses its own organic force, and this force, when received into the mind, modifies the views and thoughts by conforming them to itself: only in this way can the educational content bring about the inner formation.

This third conception of the relationship between the subject and the object was also known to ancient writers. Plato describes it in his *Phædro*, when dealing with the training of the orator. An oration, λόγος, he says, is a product of the mind.

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[1] *De Fin.*, V, 19, 54.
[2] *Acad.*, II, 41, 127.
[3] Vol. I, ch. XIX, 2.
[4] Schaarschmidt, *Johannes Saresberiensis*, p. 81.

It is living and is endowed with a soul. In receptive minds it germinates like a seed kernel and also reproduces new seed. It is an organism, ζῷον, with head and foot, with the middle organs and the extremities of a body; to understand it properly, one must divide it according to its different parts or members, and not, like a bad cook, break its bones. Furthermore, every science or art is a whole that comprises its parts (just as harmony contains the tones), and that develops these parts from one single concept; a collection of recipes is not the science of medicine, and an accumulation of stage effects is no tragedy.[1] Of this organic unity of science the Neo-Platonist Plotinus says: "No sentence may be disconnected from another; separate a sentence from the rest, and it no longer belongs to the respective art or science, and is like the babbling of a child. But if the sentence is a part of the science, it contains potentially the whole, and the master of the respective science can logically develop from it all the rest: the geometrician proves analytically that a conclusion contains all its premises, and synthetically he proves all that follows from it."[2] This third view is the only view that does full justice to the value of both subject and object. The content of education is not raw material, but an organic whole containing in itself its own plastic law which it imparts to the receptive mind, where it operates as the educational content of the respective branch. But this receiving of the mind implies more than a merely passive attitude on the part of the subject (pupil): it demands self-activity, calls into play the inner forces, nourishes and strengthens the mind; and thus every educational content is, in this sense, a mental food and represents an increase in mental power.

3. In educational theory and educational practice there is much opposition between these two elements, the subjective and the objective, and this may lead to one-sidedness.

All practical instruction inclines toward the material, objective factor; and, to correct this tendency, educational theory must stress the formal side. Many teachers have no other aim than to have their pupils acquire the knowledge of this or that branch, to finish the pensum[3] of the class; and rest satisfied

[1] *Phædro*, pp. 265-276. [2] *Enneades*, IV, 9, 5.

[3] Pensum, from pendere, to weigh, denoted originally what had been weighed; specifically, the wool weighed for the spinners; cf. Verg., *Georg.*, I, 391: "*Nocturna carpentes pensa puellae.*" But even the ancients used the term in the applied meaning: "*Me ad meum munus pensumque revocabo.*" (Cicero, *de Oratore*, III, 30.)

with cramming the subject-matter of the periodic examinations. Their material maxim: "Instruct so that the subject-matter be acquired," may lead to such a conception as Dörpfeld aptly describes as "didactic materialism" (in his work of the same title), since it insists on the material of education without any understanding of its intellectual form.

But in opposing this practice, educational theorists have often gone to the opposite extreme, and have studied the results of education from the viewpoint of the subject exclusively. With such theorists the object is an indifferent medium, for their one guiding principle is the formal maxim: "Instruct so that the activity of the mind be increased, elevated, and ennobled." This view looks upon the educational content as mental foodstuffs or as building stones for the mind; and, consistently, the development of intellectual power is declared to be the sole end of education. Pestalozzi thus insisted that education should aim, not at giving information, but at producing psychical effects. Educationists of his school recognize a formal education whose content the school might autonomously fix with a view to obtaining the best intellectual development of the pupils, and they expect the pupil, if properly trained in formal education, to find no difficulty in mastering any subject-matter whatsoever. This is didactic formalism, for here there is obvious danger of ignoring that we learn in order to know, that we practice in order to become skilled, and that the content of science has its own laws, and that the recognition of these laws constitutes a goodly part of the moral effects of education.

Philip Wackernagel's criticism of this view, as given in his work, *Über den Unterricht in der Muttersprache*, is just, though harsh: "The exaggerated claims made by rationalistic pedagogy are an outcome of the degradation of science; men are no longer bent on learning to know the object; they are busy with forming and entertaining the subject, *i.e.*, the pupil. There is no reverence for the object, neither for its eternity, nor for its organism. If men reverenced the object properly, they would study it not merely for the present. Instead, they would regard science as what it is in fact, the infinite study of its content, and not as an application of subjective conceit to the object."

4. Both erroneous conceptions result from separating what belongs together, and must mutually neutralize each other for the purpose of leading to the correct principle. The material of education is at one and the same time an educational instru-

ment (*Bildungsmittel*) and a teaching content. The pupils' minds must assimilate this content, but to do this they must assimilate themselves to it. To produce an inner form is the aim of education, but this very form is connected with a content that can not be acquired unless the mind enters into the outside world. The inner form is, indeed, a quality of the subject, but this quality can not be produced unless the subject devotes its attention to the various qualities of the object. The pupil is only the relative, not the absolute, measure of the teaching content, *i.e.*, his power of assimilation must be taken into consideration. Similarly, he is not the measure of the amount of disciplinary training he is to receive. The care bestowed upon the body differs on this point from instruction and discipline: the amount and methods of physical education are largely determined—because the physical well-being is the sole aim—by the child's physical condition; whereas the intellectual and moral welfare of the pupil is only the end of instruction and discipline, the larger and broader aim being the transmission of the treasures of knowledge and life.

The material and formal maxims are true only when incorporated in a series of imperatives; and their respective place is either at the beginning or at the end of the series. The material maxim demands rightly that the content of the respective branch be acquired and mastered; here we reach the whole by way of the part; here the totality of the educated mind is obtained by the partial acts of receiving a certain content. But this knowledge, though complete in itself, is still only a part of a larger whole, and only after this latter has entered the mind shall we have a truly educative influence. In the whole there are essential and non-essential materials, fruits and leaves; the pupil can not elaborate all the elements of knowledge equally well; nor do all the parts need to be assimilated to the same extent. There are different degrees in the vitalization of what is offered to the mind: some elements penetrate to the roots of the inner growth, others remain on the surface. We must distinguish between the total content of a branch and its educative content. The educative content comprises only those parts of the total content that vitalize the respective branch; and that these vitalizing elements be assimilated, is essential to the success of the educative process. Therefore, we must add to the maxim, "Instruct so that the content be acquired," this further point, "and that its educative content be brought out particularly." This

version of the maxim provides for the imparting of detailed knowledge, yet forbids senseless cramming.

But to find the right equation between the object and subject, a further step is required. It is not sufficient to impart the educative content of only one branch; we must, on the contrary, reap all the fruits possible from the various studies, for all these must contribute their share of educative content towards the intellectual growth of the subject. The partial results should combine in the complete personality, and the several beginnings of inner formation should combine in one unified form. Thus the instructor must not only strive to bring out the educative content of each branch, but must also see to it that this educative content occupy its proper place in the total growth and tend to increase the whole intellectual power. This intellectual power, however, must be subordinated to the moral aim, for this is the highest end of man. Thus we have arrived at the formal maxim.

5. Similarly, we may proceed from the formal view and, following along the lines suggested by it, we shall finally arrive at the material view. To increase, to elevate, to ennoble the intellectual activity, to nourish the mind and foster its growth—all these activities are, if rightly understood, proper functions of the educative process. But we can not fulfill these functions if we take the viewpoint solely of the subject and disregard the latter's relationship to the object. Education, doubtless, implies growth in knowledge, and not mere psychical growth. To stimulate the mind is not sufficient, because the educator must impart positive knowledge to the pupil and must fill his mind with a true and valid content. The educator may not employ the arts and sciences as mere storehouses, whence he might select only so much as he intends to use. His true mission is to lead the mind up to the treasures contained in the arts and sciences, for an inner form is unthinkable without a proper share of these treasures.

Education must make the mind grow through science and art, but it must aslo make the mind grow up to science and art. It must bring light into the mind. But to do this, it must make the sources of light accessible. Dead knowledge and mechanical skill are not education. Neither is a vacuous striving or an empty form education. Education is the inner form enclosing a content, and this is synonymous with the vivification of the material of instruction.

It may, perhaps, not be amiss to illustrate what has been said by a few examples. The formal gains accruing from the study of the ancient classics are liberal training, refinement of taste, a ready command of language, and training in logical thinking. But though these formal gains are strong arguments in favor of the classical course, they do not prove convincingly that the study of the ancient classics is an essential part of liberal education. These purely formal gains might possibly be obtained by other studies that would make less heavy demands upon time and energy. But when we consider the objective content of the classics and proceed in the matter from the subject to the object, we shall readily understand that the classics represent such materials of knowledge as can not be dropped from the curriculum: the ancient world, which the classics represent, is to a great extent the basis of modern culture; an intimate knowledge of it is needed to understand ourselves; and this knowledge keeps us in touch with a civilization which, though past, is still a living force.

Similar considerations must hold in evaluating other studies. The study of mathematics is undoubtedly fruitful of psychical results; it trains the mind to be exact, penetrating, inventive, and logical; it rouses the speculative sense, and gives one a good idea of an architectonic whole of truths. Nevertheless, if this whole of truths would not occupy so important a place in the whole of truth, if the content of mathematics were not so important for our whole field of knowledge, the formal gains just enumerated would not insure it a place in a course of general education. Again, to cultivate the art of music is a pleasant occupation for one's leisure hours. Moreover, it trains the sense of hearing—a gain, not only for the body, but for the soul as well; it is a wholesome discipline for tone-sensation as well as for innervation; it exercises a wholesome check upon even the thoughts and feelings. And yet if the study of music were not, at the same time, the key to the understanding of the masterpieces of the great composers, to their world of the beautiful harmonies of sound—all the formal gains enumerated would not justify the time that is spent on it.

CHAPTER XI

Education in its Relationship to the Subject

1. In order to determine more closely the relations between the content of education and the subject (or the pupil) that is to receive this content, we may pursue two different methods of investigation. We may proceed either from the content and investigate how much it contributes toward the formation of the subject; or we may proceed from the subject and inquire what points of relationship are found, or are to be established, between it and the content. The older educationists generally followed the first method, and their writings contain much valuable matter relative to the educative content of the different studies. But modern educationists have, to a great extent, adopted the second method; and this is consistent with their general practice of attending more to the subjective factor. Both methods are valuable and supplement each other; and each proves, one may say, the correctness of the other: the content of education must be adapted to touch all points of relationship between it and the subject; and, conversely, the points of relationship in the subject must be made broad and varied enough to receive the fruits of all studies.

Here we shall study the matter in its bearing only on the subject, and reserve the treatment of the educative content of the various branches for the third part of the present work.

The educationists of the Kantian school, such as Niemeyer, Milde, etc., found it convenient, for the purpose we here have in mind, to apply Kant's theory of the mind faculties. Herbart, however, denied the plurality of the mind faculties and consequently had to oppose also this policy. He pokes fun at the directions given for developing the individual faculties, and likens them to a collection of recipes. To him the science of education seemed but an aggregate of considerations, misgivings, and warnings, and appeared to be haunted by the fear lest one or the other point be forgotten or left unheeded.[1] In his inquiry into the educational values Herbart employs as guiding principles the concepts of interest, sympathy, circle of thought, and complexes of presentations (*Vorstellungen*). He divided interest into empirical, speculative, and æsthetical; and sympathy, into sympa-

[1] *Pädagogische Schriften*, ed. by Willmann, 1873–1875, II, p. 343 and *ibid.* note 27.

thetic, social, and religious.[1] Consequently, each subject-matter of instruction must be evaluated according to what it contributes to empirical knowledge, speculation, taste, individual sympathy, community spirit, and religiousness. But all the influences of instruction must unite with the influences of experience and intercourse in the circle of thought; and the latter consists of circles, masses, and complexes of presentations. These circles, masses, and complexes should be rich, interconnected, and articulated; they are the seats of the feelings and desires; and the outline of the circle of thought or of presentations shows at the same time the ground plan of the character.

2. Though we accept the fundamental principles of the older educationists, yet we must admit that neither their conception of the scheme of the mental faculties nor the use they made of it was very happy, especially since they failed to demonstrate the co-operation of the factors of the soul. However, their division of the functions of the soul into theoretical and practical—*i.e.*, its cognitive and appetitive activities—and into rational and sensuous faculties is based upon good metaphysical and moral grounds, and has outlived all other theories on the subject.[2] Hence we must reject the views of Herbart in so far as they are opposed to this division, but they are so only in part. In fact, his conceptions of interest and sympathy throw light on the interaction of the theoretical and practical functions, and his conception of the circle of thought points the way to new discoveries. We agree with Herbart that ways must be sought to lead from knowing to willing, from the circle of thought to character, though we prefer short cuts to his roundabout roads. A considerable portion of Herbart's teachings may be separated from their false psychological foundation; and it would be unwise to reject his wise directions for the sole reason that we can not accept his first principles. It is a just charge against modern philosophies that they began and ended in the head of one man. In this respect the science of education should not imitate them, but should welcome any helpful ideas, regardless of their source.

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[1] Cf. Herbart, *Science of Education*, transl. by Henry M. and Emmie Felkin, London, 1892, p. 50.

[2] Cf. Maher, *Psychology*, 7th ed., London, 1911, pp. 28 ff. There is a peculiar contrast between the offhanded way in which many modern philosophers declare the plurality of the mind faculties incompatible with the unity of the soul, and the thoroughness with which the Schoolmen investigated the matter.

When analyzing the human soul, we note, in the first place, two kinds of unmistakably different phenomena, the theoretical and the practical functions, and these may be said to have their seat respectively in the mind and in the heart (*Gemüt*). We find this same general contrast in many pairs of terms that express psychological or kindred relations: for instance, mind and instinct, perceiving and desiring, ideas and interests, intellect and will, head and heart, intelligence and morality, wisdom and virtue, contemplative and active life, knowing and doing, knowing and willing, the true and the good, instruction and discipline, education and training, culture and civilization, etc.

Education belongs to the theoretical functions, because it operates with knowledge and intelligence, which have their seat in the mind. But the ultimate aims of education are moral, and hence education must extend its influence to include the heart also; it begins with the intellectual side of man, but from thence, as was shown above (ch. I. to ch. VII.), it must influence and form the whole man. On this account the science of education must be interested most in the relations between the two basic faculties. But as the whole man is to be formed, it must take into consideration also those other functions that are of an organic nature and that constitute the elementary foundation of soul-life: the vegetative, the motor, and the sensuous functions.

3. All higher functions presuppose the vegetative life, and any disturbance of it may react unfavorably on one's mental activity as well as on the feelings. The vegetative life is a factor which is occasionally ignored in theory, but its neglect in practice never remains unpunished. The motor functions are the basis of the arts, both the fine and the mechanical. These functions may be traced back to instinctive impulses, and though their full development is possible only with the aid of the cognitive faculties, they still represent a distinct sphere. It is for this reason that Aristotle, in keeping with his distinction between movement, appetency, and sensation, has placed the form-giving (ποιητικός) element beside the practical and theoretical.[1] There are several series of terms, each consisting of three members, which show the universality of this disjunction: head, hand, and heart; knowledge, skill, and will; intellectual, æsthetical, and ethical; sciences, arts, and morals; the ideas of the true, the beautiful, and the good; science, art, and life.

[1] *Supra*, ch. IX, 4.

Though the form-giving element is mostly neglected by educationists, it actually represents a connecting link between the theoretical and practical elements. The arts (*Fertigkeiten*) have in common with the sciences that they must be taught; and with good morals they have in common that practice makes them our own. Both knowledge and skill are based upon a definite intellectual content, and both morality and skill are bound by certain laws to which they must conform. Skill in a certain field is both a proof of knowledge and a stimulus to further activity. Art makes knowledge a thing of life. Love teaches the arts; and conversely, what we practice we learn to love, and this love preserves fresh and new all that we know. The instruction in the arts is complementary to the instruction in the sciences; the latter opens the way by which food can be brought to the mind from without, while the former opens the way by which the mind may influence the outer world: the instruction in the sciences is the orientation of the mind, and the instruction in the arts is its instrumentation. The course of general education must concern itself chiefly with those form-giving functions that deal with movements of bodies, with sound, and plastic things. Manual dexterity lies below this field; and language and speech, the most spiritual of all art materials, lie above it.

Being the first building stones for the circle of presentations (*Vorstellungskreis*), the sensuous functions are the starting-point of cognition. They may be considered as a part of the intellectual activity, provided the latter be understood *a potiori*. Still, the older psychology did well in assigning the intellectual and the sensuous functions to two separate faculties of the soul, because the knowledge obtained through the sensuous functions is limited to the individual, whereas definitions and all knowledge of causes, purposes, and values require the activity of a higher faculty. Again, the presentations of sensuous origin are the material of psychical occurrences, but thinking and willing can not be conceived as an occurrence (*Geschehen*), but only as a doing; the interplay of sensuous presentations may be likened to a mechanism, but not so the conscious actions, for these contrast the true with the false, and the morally right with the morally wrong.

Education need not provide the sensuous material of the circle of thought, as this is done by spontaneous activity. But even this sensuous material can not be elaborated without the aid of instruction and suitable directions. It is the object of the study of mathematics to elaborate the presentations of

magnitude, as represented on both a large and a small scale in the visible world. Geography, nature study, and mathematical object lessons train the powers of observation, in order that nature with all its forms and phenomena may be not only seen, but also noticed. The arts also, being concerned with sounds, colors, and forms, deal with the sensuous element and prevent its being overlooked amid the higher activities.

What we ourselves have seen and experienced, constitutes but a small part of the content of our circle of presentations. Reports of what others have seen and experienced, records of the past and news from distant lands, what the mind's eye has seen and what is fixed in the memory—all this constitutes the greater part of the content of our circle of presentations. Education must influence all these functions, not, however, with the vacuous aim of merely evoking them into activity; but must co-ordinate them with the world-picture to be obtained, and must supply them with a valuable content. The philological element of instruction is in this respect of particular value: the science of language interprets what has been perceived and affords exercise for the memory; books are the embodiment of memory, and broaden the intellectual horizon; works of poetry develop the imagination, and also offer easy and useful memory exercises. History and geography also contribute some of their educative content; the order of time and the presentations of space are needed for grouping the many pictures crowding in upon the mind. The arts, too, contribute their goodly share, for they occupy the imagination and teach the language of symbols.

4. The circle of presentations is the foundation, the storehouse, the workshop of thinking. The function of the higher faculty, *i.e.*, intellectual perception, converts it into the circle of thought. All sciences as well as the theoretical side of the arts stimulate thought. Not a single science but evokes logical activities: analyses and syntheses, forming of concepts, judgments and conclusions, definitions, divisions and argumentations, etc. But what the individual disciplines contribute toward forming the understanding, will vary according to their respective content and method. Grammar is the most elementary and the most general school of thought, for it is the first to orient the mind in the intellectual world. Rhetoric, later, lays the foundation for the study of logic. Mathematics, being presuppositionless, tests and strengthens the reasoning faculty

by forcing it to rely on itself. Philosophy gives plentiful opportunity for abstract thinking, and teaches the laws of thought. Theology also calls for distinctions, definitions, and argumentations. The empirical sciences teach the pupil to think analytically and to generalize logically. The arts may demonstrate how the general governs the details of the execution and how the general must be applied to them synthetically.

The ancients rightly distinguished two kinds of thinking. The first they conceived as intellectual seeing, and in the second they recognized some inner discourse. The first is the intuitive thinking of the understanding, *intellectus*, νοῦς; and the second, the discursive activity of reason, *ratio*, λόγος. The understanding is guided by the question, *what?* In the variety it looks for the general; in the phenomenon, for the nature; in the external, for the internal; in the sign, for the meaning. Reason is stimulated by the question, *why?* It looks for the internal connections, for the cause, for the necessary. The understanding arrives at concepts; and reason, at conclusions; while judgment is a mode of thought common to both. When a concept is fully grasped, we have a definition; and the conclusion is the result of the proof.

Despite the various uses to which the understanding is put in education, we may distinguish three kinds of understanding: the first is the understanding of the words, the second the understanding of the matter, and the third the practical understanding. The understanding of the words has for its object the meaning, the thought; the second understanding has for its object the nature, the aim, the concept, and, therefore, implies the comprehension of a thing; the third understanding demands the knowledge of the means to attain the respective end, and hence is the transition from knowledge to skill. The combination of these three kinds of understanding may be exemplified best in language: the object of the first understanding is the sense of what has been said; the forms of language are the object of comprehension; and the practical understanding implies the use of language. Similarly, if we have a figure or a formula we must, first, ascertain its meaning; secondly, grasp upon what it is based; and, thirdly, know to what use it may be put.

5. The reasoning faculty deals with those reasons that either support cognition (theoretical reason) or that govern man's actions (practical reason). Reason looks to what is and what should be, and the resultant cognition is declaratory and im-

perative.[1] It establishes ideas as guiding principles for cognitions as well as actions, and sets up ideals as models.[2] It displays the super-personal treasures, which are sought after for their own sake,[3] and discloses their transcendental origin.[4]

The rational sciences are the chief means for developing the theoretical reason. But indirectly the empirical and the applied sciences serve the same purpose, for they also raise questions of cause and effect, of end and means. Strict reasoning is characteristic of mathematics, and its sensuous substratum renders it available early in life; it prepares for the study of philosophy, especially logic, the latter representing an advanced stage of abstract thought. Physics and also theology contain many rational elements. Mathematics evolves the speculative elements of physics; and philosophy evolves the speculative elements of theology.

The practical reason is developed on its formative side by means of language, poetry, literature in general, and the fine arts. Any other materials, however, that are the object of the æsthetical interest, or that foster a refined taste—such as are found in the natural sciences, in the history of civilization, and in philosophy—may likewise further the development of this side of the practical reason.

The moral side of the practical reason is developed by means of all such educative contents as develop the consciousness of what is good and bad, just and sinful. Therefore every instruction period that deals with human relations should contribute its quota to the development of the moral sense. This holds principally for religious instruction and the subjects of literature and history; all such instruction should evoke moral judgments, enkindle sympathy, and inspire devotion. All branches of the curriculum can assist in developing the religious consciousness, and will do so the more effectively the more ingenuously a religious aspect is given to the subject. But religious instruction must, nevertheless, remain the centre and basis of all moral training, and must be supplemented by religious exercises, both public and private.

6. The cognitive faculties represent the starting-point as well as the goal of the educative process. But the latter can

[1] Aristotle, (*Probl.*) XXVIII, 3) distinguishes λόγος δηλώσας and κελύσας, ratio denuntians et præcipiens.

[2] Cf. *supra*, ch. VIII, 1. [3] Ch. IV, 3. [4] Ch. V.

not begin to operate without the work of those practical functions that belong to the appetitive faculties. The educative process aims, indeed, at the formation of the inner life, but can not dispense with the co-operation of the inner life itself. We have seen above that the educational motives are drawn from the whole field of human strivings:[1] the instinctive impulses to learn, to know, to imitate are the first stimuli to educate oneself. Nor can we forego in this educative process the assistance derived from the practical interests in possessing something and in holding a proper position in society. We must also acquire habits of regular activity so as to insure proper control of the educational appetency. The forming of a circle of presentations must, finally, go hand in hand with the forming of a circle of interests.[2]

The intellect and will develop, like the circles of presentations and interests, amid mutual influences upon each other: intellectual cognition raises the desire to an act of the will; and also raises the habitual and unconscious doing to conscious activity; and conversely, the will is the power inspiring the increased mental activity required for thinking.

The development of man's feelings (*Gemüt*) is intimately connected with the development of his reason: if we conceive reason as an inner speaking, we must concede that the feelings give resonance to this voice. "Thy reason," says Schiller, "is the voice of the good, but thou thyself art thy heart: 'tis well with thee if thy reason will ever dwell in thy heart." The theoretical reason seeks, not mere intellectual growth, but something that will satisfy the hunger and longing of the heart. It is significant that the ancients say "toto pectore cogitare," and that Scripture speaks of the "cor intelligens" and the "sapientes corde."[3] What we have thought, is our full possession and a factor in our inner life only after it has become the object of our feelings:

> "If you but think without a feeling strong,
> One wave of thought will merely wash the other along;
> Not what you think, but what you feel is true,
> Your thought but makes your feeling clear to you." (Rückert.)

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[1] *Supra*, ch. I, ff.

[2] We employ the term "interest" in a different sense than Herbart. Herbart uses it in the sense of intellectual appetency (*Streben*); whereas, as used above, it implies the stimulus to regulated appetency in general.

[3] Deut. XXIX, 4; Ex. XXVIII, 3.

The form-giving reason depends even more on the co-operation of the feelings. It is the heart that makes men eloquent: "pectus est quod facit disertos." Man must feel "in his innermost heart what he would form and create with his hands." Like the beautiful, the good and what is pleasing in the sight of God can not be fully grasped without love. The knowledge of the good is imperfect until it has become a matter of conscience. The sense of right and wrong is a real power for good only after it has become an integral part of the settled character.

Consequently, the educative process must take into account the heart and the feelings.[1] But it is inadvisable to make a further division of the feelings for the purpose of obtaining points that might guide us in evaluating the educational content. Knowledge can be acquired and imparted; the arts can be learned and taught; but the feelings come and go, and can no more be taught than commanded. The life of the feelings is no workshop of education, rather a hall where education may display its choicest products. Only general rules can be laid down for the control of the feelings. The educator must check the sudden changes in feeling and the outbursts of strong emotion, without, however, fostering a cold indifference. He must, as it were, tame the wild emotions, without robbing them of their native strength. He should, indeed, bring light into the dark world of the feelings, but should not dissect the latter too minutely, nor attempt to convert them into conscious actions. These and other imperatives must suffice on this subject in default of the more definite directions that may be given with regard to what pertains to cognition and interest.

[1] Cf. Maher, *Psychology*, pp. 221 ff.

PART III

THE CONTENT OF EDUCATION

I

ANALYSIS OF THE CONTENT OF EDUCATION

CHAPTER XII

Introduction and Division

1. The subject-matter of education is in a certain sense universal, and it might, therefore, appear impossible to enumerate all its parts. Education may, indeed, consider the whole content of human life as its proper field, even if educators require and assimilate only so much of it as is needed for their particular ends. But we should be defeating our purpose if we proceeded in our analysis of the educational content from the unlimited content of human life; nay, we may not proceed even from the system of the arts or the system of the sciences. Instead, we must turn to see how education disposes of these materials, and thus we shall obtain an internal principle of division. There are certain materials that are essential parts of education, while other materials are such as education merely works with. The first kind of materials must occupy the chief attention of the pupil, and they have been from the earliest times the main content of school education. The second kind of materials, though not excluded from the schools, may be mastered more easily than the first kind without a teacher. These materials were introduced into the schools at a comparatively late date, and hence may be called accessory, whereas the materials of the first class are the basic elements of education. The arts (*Fertigkeiten*),[1] in as far as they enter into general education, and all the sciences that include elements of the arts, or that, at the least, require a certain amount of systematic training, are basic elements. All those sciences, however, whose

[1] There is no accepted English term for the German *Fertigkeiten*, under which term Willmann comprises music, graphics, technology, and gymnastics. See the English translation (by Holland and Turner) of Pestalozzi's *How Gertrude Teaches Her Children* (2nd ed., Syracuse, 1898), pp. 7-15, for a long list of English synonyms of the German term *Fertigkeit*. The English term "arts" seems, however, to be used most widely in this sense; cf. *West Virginia Institute Annual*, Charleston, W.Va., 1908, p. 76.

chief object is the imparting of knowledge, and not skill, are accessory elements.

The first place, for intrinsic importance as well as for the time and labor to be spent on them, must be assigned to the disciplines that require much practice and systematic training, *i.e.*, to the school sciences proper. Of these the greatest amount of time and energy must be given to the sciences that deal with language—grammar, rhetoric, literature—and these may be comprised under the comprehensive term philology. Philology means primarily an interest in language, but has often changed its meaning;[1] and here we extend its meaning so as to include the first elements of language study, *viz.*, reading and writing. As a school science, philology implies the acquisition of linguistic knowledge as well as practice in the use of language: we can not properly enjoy the literature of any language without, at least, some proficiency in the use of the respective tongue. The mastery of language, both written and oral, is of great importance in all schools, in the elementary school as well as in the university. Proficiency in language is the test applied universally for determining a man's educational attainments: the *analfabeto*, who is unable to read or write, is considered uneducated. To teach the correct use of the mother-tongue is the aim of elementary school education. The well-bred man is expected to know at least one foreign language; and the knowledge of the classical languages marks the man of liberal education. No one can claim to be educated unless he can express his thoughts in correct and intelligible language and is familiar, besides, with the classics of his mother-tongue. "He is able to write," designates in its different meanings different degrees of education: it implies either mastery of mechanical writing only, or the ability to write grammatically, or the proficiency to write with due observance of the rules of rhetoric.

In accordance with old school traditions, arithmetic is taught in the elementary school beside reading and writing, and in the secondary school mathematics is taught beside language and literature.[2] Thus mathematics is the second school science; and though it does not receive as much attention as philology—as not being of such general need—still it is almost everywhere considered an essential part of education. As it hardly admits of popular treatment, it is hardly ever studied outside the schools.

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[1] Vol. I, ch. IX, 7; ch. XXII, 1; ch. XXIX, 1.

[2] Vol. I, ch. IX, 6; ch. XII, 4; ch. XVI, 2; ch. XIX, 1.

On account of its formal character it has always been considered a propædeutic discipline, and is regarded as the foundation of physics, philosophy, and even theology.

2. Philosophy and theology are the other two school sciences, and they are higher studies than mathematics and philology. Historically, theology is the mother of all sciences; it was the first science studied, and its study gave rise to the first schools.[1] In the East it was the foundation of the whole system of education, but in Greece and Rome it had to surrender this position to philosophy, while the Christian school system includes both theology and philosophy in the curriculum. Religious instruction, the elementary form of theology, is one of the elementary school branches; and thus the four R's: reading, writing, arithmetic, and religion, are the essence of elementary school instruction. As logic or dialectic, philosophy is co-ordinated with the language studies;[2] it is studied extensively outside the schools, and many books and lectures treat it in popular form. Philosophy occupies the borderland between higher and middle schools, between school and life, and between general education and scientific research. Nevertheless, it is a good school science, first because of its propædeutic value for professional studies, and secondly because of its general training of the reasoning faculty.

3. The school sciences do not embrace all knowledge. They are but the core of it; or, to use a different picture, but the skeleton which must be covered with all the varied knowledge that deals with both nature and human life as well as the past and the present. This varied knowledge forms a polymathic field that offers large opportunities for individual initiative. All sciences that can not be well reduced to the form of school sciences —no matter whether they incline to a professional or a popular form—belong to this field. Such sciences may be cultivated in the garden of scholarship, or they may grow wild, but they will not thrive in the nursery. To this class belong the historical sciences, which are fostered partly by the historical interest and partly by the political or patriotic interest; likewise geography, either as closely connected with history or as the independent study of the earth's surface; and finally all the sciences that deal with nature: 1. natural history that deals

[1] Vol. I, ch. IV, 1; ch. V, 1; ch. VII, 1; ch. XV, 3.

[2] Vol. I, ch. IX, 5; ch. XII, 6; ch. XIX, 2.

with the natural phenomena; 2. natural philosophy that explains the physical forces; and 3. the applied natural sciences that deal with the service that man may obtain from nature. But history, geography, and the natural sciences do not exhaust the field. Cyclopedias and compilations of all sorts supply much information that is both useful and entertaining, and we shall do well to regard this amorphous polymathic knowledge as a fourth field of our second group of educational materials. This last field is, unlike the third, not co-ordinated with any definite science.[1]

The first two groups can be traced back to the sciences, but not so the arts which form our third group of educational materials. Music occupies the first place by virtue as well of its age as of its great vogue. Vocal music is taught regularly in the schools, but instrumental music is largely left to individual initiative. Orchestics is the transition from music to gymnastics;[2] and gymnastics comprises calisthenics and all other physical exercises that aim to develop one's personality. The ancients prized graphics[3] for its educational value, and it is, indeed, the introduction to the arts of design. Some connection was established in modern times between graphics on the one hand and the industries and the mechanical trades on the other by treating certain elements of technology as a part of graphics. Technology is now coming to be recognized as the complement of, and connecting link between, other branches of study.

CHAPTER XIII

The System of the Educational Contents

1. It is not difficult to find in our division all the courses of study that were ever recognized in the history of education, and this fact is a strong argument in favor of our classification. The ten Vêdânga, or members of the *Veda*, can be traced back to our school sciences: etymology, grammar, prosody, exegesis, belong to philology; logic, to philosophy; astronomy takes the place of mathematics; and the other sciences—dogmatics, jurisprudence, legendary lore, and liturgy—are subdivisions of theology.[4] The Egyptian system of the priestly sciences embraces written language, mathematics, and philosophical and theologi-

[1] Vol. I, ch. IX, 2; ch. XII, 5; ch. XIX, 5; ch. XXII, 4; ch. XXVI.

[2] Vol. I, ch. XI, 1. [3] Vol. I, ch. IX, 3. [4] Vol. I, ch. IV, 2.

cal disciplines, but does not entirely neglect geography and natural science (medicine). The gifts of Thoth-Hermes are the following: oral and written language, astronomy, mythology, music, and physical culture. Among the Egyptians history was not regarded as a school science, but the knowledge of past events was extensive and highly valued.[1]

The Greek system of education may be briefly described as the union of music and gymnastics—music including here the study of language and literature. In the encyclical studies, grammar, rhetoric, mathematics, and philosophy were added to music and gymnastics. The programs of study proposed by Plato and the Pythagoreans gave a theological coloring to philosophy, the latter being the capstone of general education. In the encyclical course of study geography is treated under astronomy; and natural science, under philosophy. The empirical materials of these two subjects, as well as history (ἱστορία) and the study of literature (φιλολογία), are left to the initiative of the individual scholar; graphics, as taught in the schools, embraced the rudiments of the arts of design.[2]

The system of the seven liberal arts together with its supplement of Christian elements is co-extensive with our group of the school sciences: grammar and rhetoric with their "appendixes" of "histories and poets" represent philology; the Quadrivium represents the mathematical element; and dialectic, the philosophical; the liberal arts were the steps leading up to theology, which was the capstone of higher education.[3] The Renaissance, repelled by the barbarous Latin of the medieval textbooks, claimed unjustly that the liberal arts system was a product of the bad taste of the Middle Ages. It is, in matter of fact, of ancient, and not of medieval, origin; and its essentials may be traced back to the Pythagorean and Platonic system of studies.[4] The root-idea of the system is neither barbarous nor in bad taste; it is no other than that this system serves as a preparatory course for all sciences—especially for the science of the supernatural—by combining into one whole, on the one hand, grammar, rhetoric, and logic, and, on the other, arithmetic, geometry, music, and astronomy. There is in this system so much inner truth that it is to-day still permitted to influence—though many would resent this influence, if they were conscious of it—our school curricula, for these are still based on the assumption that the study of language, mathematics, and logic is the best preparation for higher studies.

[1] Vol. I, ch. V, 1. [2] Vol. I, ch. IX. [3] Vol. I, ch. XIX. [4] Vol. I, ch. IX, 5.

2. The system, however, of the seven liberal arts has been discarded, but no other system of studies has found universal acceptance; and educators have been satisfied with grouping together for practical purposes a certain number of subjects. Languages, sciences, arts, and religion are common groups since the 17th century. In France, the group of "lettres" is opposed to that of the "sciences," the former embracing philology, philosophy, and history, and the latter, mathematics and the natural sciences. The first group is known also as that of pure letters, and the second as that of the exact sciences. "Polite learning" is also opposed occassionally to the "exact sciences," the former including history beside languages and literatures, and hence it might be designated also as the historical group versus the group of the natural sciences. In England the "liberal studies," *i.e.*, language, literature, and classical studies, are contrasted with the "permanent studies," *viz.*, mathematics and natural philosophy; the term "permanent studies" is used also in a narrow sense for mathematics alone, the latter being supplemented by the "progressive studies."[1]

These disjunctions are happier than the division of the educational materials into *humaniora* and *realia*, or humanistic and realistic branches. It would be more correct to set over against the humanistic disciplines that deal with human elements, those that deal with nature; and, as Niethammer justly demands, the *idealia* should be contrasted with the *realia*. The opposition existing between the humanistic sciences and the natural sciences may be traced back to the well-founded disjunction of ethics and physics, which is a factor in all groups of the educational materials. But the distinction between the *idealia* and the *realia* may be traced back to our opposition between the school sciences and the accessory disciplines: philology deals with thought and the symbols of thought; mathematics, with creations of thought; logic, with forms of thought; while the other philosophical disciplines and theology deal with ideas; and history, geography and natural history deal with things.

Some didacticians, both old and modern, combine the disjunction of ethical and physical sciences with that of material and formal studies. Thus Comenius distinguishes physico-material disciplines (geography and nature study) and physico-formal disciplines (the mathematical sciences), ethico-material disciplines (ethics, etc.) and such formal disciplines as are, at

[1] Wiese, *Deutsche Briefe über englische Erziehung*, Berlin, 1852, Brief 11.

the least, in their essence of an ethical nature (dialectic and rhetoric). Comenius does not include history, because he suggests that it be treated parallel with physics, mathematics, ethics, dialectic, and rhetoric.[1] Herbart distinguished two main groups of instruction subjects— the historical and the scientific. The historical group embraces not only history proper, but language study as well; the scientific includes, beside natural science, mathematics.[2] History and natural science deal with things; mathematics, with forms; and language, with symbols.[3] Ziller comprises all ethical and historical branches, religious instruction included, under the so-called *Gesinnungsunterricht;* and the latter, if supplemented by natural science, constitutes the *Sachunterricht;* philology is the formal complement of the *Gesinnungsunterricht,* and mathematics is the formal complement of the *Sachunterricht.*[4]

3. We can combine this division of the sciences with the results of our historical inquiry by taking into account the connecting links embodied in the concepts ethico-physical and material-formal. The following subjects have a pronounced ethical character: theology, philology, history, music; while mathematics, natural science, technology, and gymnastics have an equally pronounced physical character. On the other hand, philosophy deals with the ethical and the physical world; geography marks a transition from one field to the other; polymathic knowledge comprises materials from both fields; and the arts of design, represented in the schools by graphics, also draw their material from both fields; and thus these subjects constitute a third class, an ethico-physical group. There is, likewise, a connecting link between the material and the formal sciences; the accessory disciplines alone have a pronounced material character, while the arts have a formal character. The school sciences, however, are both material and formal. Language is the formal element of philology; literature and philological erudition are its material elements. The application to practical conditions that is made in arithmetic, algebra, and trigonometry, supplies the material element of mathematics. Logic is the

[1] *Did. mag.*, cap. 30, §§ 4-16.

[2] *Outlines of Educational Doctrine*, Transl. by A. F. Lange, New York, 1913, § 37, p. 24.

[3] *Science of Education*, Transl. by Henry M. and Emmie Felkin, London, 1892, p. 150.

[4] *Grundlegung zur Lehre vom erziehenden Unterricht*, Leipzig, 1865, §10, and *Vorlesungen über allgemeine Pädagogik*, Leipzig, 1876, § 21.

formal element of philosophy, the other philosophical disciplines are its material elements. Theology has a formal element in that it is connected through exegesis with philology. Consequently, the school sciences may be called a material-formal group. Finally, we may distinguish between scientific (*gelehrten*) and non-scientific (*nicht-gelehrten*) studies—philology, theology, philosophy, and history being the scientific subjects.

The following diagram shows the results of our inquiry, the scientific subjects being printed in italics:

EDUCATIONAL MATERIALS

Basic disciplines. School sciences.		Accessory disciplines. Popular sciences.	Arts. Popular arts.
Idealia. Material-formal.		Realia. Material.	Formal.
Ethical	*Philology.* *Theology.*	*History.*	Music.
Ethico-physical	*Philosophy.*	Geography. Polymathic knowledge.	Graphics.
Physical	Mathematics.	Natural science.	Technology. Gymnastics.

CHAPTER XIV

The System in Actual Operation

1. The classification of the educational materials can not represent, even if it take due account of historical development, what may be called the real structure of the educational content, for this is the result of certain historical conditions. The classification may be compared to the first sketch of a picture, which, though it fixes certain basic lines, can not give an adequate idea of the finished picture because it lacks color and light and shadow. The diagram of the educational materials is, indeed, recognizable in the different historical systems of education, yet it is carried out and arranged differently in different ages and in different countries.

For instance, let the language instruction deal with the mother-tongue and the national literature only, and you will have an essentially different type of instruction than if it included also a foreign language and literature. Or let the language instruction be systematic instead of contenting itself with

mere reading and speaking, and you will have scientific instruction. Again, if you exclude the study of foreign languages from the school, you will have more opportunity for utilizing the educative content of the other branches; but if several languages must be mastered, the language studies will make such demands upon the time and energy of the pupils as to make it exceedingly difficult to reap fruit from the other subjects. It is also obvious that the attitude of the school toward the introduction of the accessory disciplines, or towards their scope, if introduced, will result in marked differences; a school that teaches the school sciences only, will differ essentially from one that teaches both these and the accessory disciplines.

2. However, the programs of study will differ most in the manner of correlating the different branches. One way to correlate the subjects is to conceive them as subordinate to, and correlated with, one branch that is regarded as the capstone of the course. Another way consists in letting one predominant aim co-ordinate all the studies, not into a material, but a teleological, unit. A third way would be not to co-ordinate the different branches, but to let them contribute to the course of study their individual share of educative content. The first type of correlation obtained in the schools of the East as well as of the Middle Ages, for here all studies were grouped about theology as their material centre. The second type prevailed in Greece and Rome and in the Renaissance schools, when the importance of the mastery of language made philology the chief subject; still this branch had to be supplemented by varied erudition, and consequently it did not represent a ring that encompassed the course of study. The third type of loose grouping of studies is characteristic of modern education, and hence concentration is so difficult a problem in modern schools: we have neither a universally recognized centre of studies nor any predominating tendency. The subjects taught in our schools would seem to have developed almost independently of one another, and it is left to the skill of the individual teacher to bring home to the pupil the links and bonds that actually connect all studies; succeeding in this, the teacher will produce at least a subjective, psychological unit. When treating the individual subjects we shall draw attention to their interrelation and interdependence so as to prepare the way for the special treatment of this question in chapters XXXIV to XXXVI.

II

THE PHILOLOGICAL ELEMENT OF EDUCATION

CHAPTER XV

Philology as a School Subject

1. Human speech and the unconscious art of language are products and boons of the social life of man, and antedate by a long time the beginnings of education. The word of conversation, the song that springs from the heart, the wise saying—they all co-operate in laying the foundations of civilization and culture. Long before the schools employed language as an educational instrument and long before the classics gave body and material to education, language had been serving as the vehicle for transmitting intellectual content from one generation to the other and as a means for assimilating men's thoughts and feelings. However, it is only the written form that makes language objective enough to invite attention and reflection, and only such language creations as have been written down become the objects of teaching and learning.

The national classics, which express in matter and form the spirit of a nation, form the oldest subject of teaching and are the basis of the philological element of education. Upon them is based all subsequent literature, whether it be the literature of science or polite literature; and the latter plays so large a rôle in general education for the reason that it is "the expression of life in words of truth and beauty." The classics of literature are the first to quicken the interest in correct and artistic expression; and thus the primitive, unconscious art of language is raised to that creative expression of thought which is at least partly conscious, and which necessitates learning and exercise. This tendency toward the art of language and the need of insuring the correct interpretation of the classics give birth to the science of language.

The science of language has a twofold function: to prove, first, a key to the treasure-house of language and, next, a guide for correct speech. The disciplines belonging to the science of language have each a special function: the science of writing

deals with the symbols of letters; grammar, with the language rules in general; rhetoric, with the rules for strong and clear expression of thought; and prosody, with the rules governing the form of poetic composition. Thus these disciplines deal with symbols, rules, and forms, and, therefore, have a formal character. But they have also an elementary character in so far as they prepare for the artistic use of language and the interpretation of the classics. They are the organon of this whole field of knowledge and creative work; and, though not pursued for their own sake, they are indispensable instruments and demand the first and the most laborious efforts on the part of the pupil.

2. Hence we include in the philological element of education the following subjects: the science of language, the art of language, and literature. In studying a language the pupils must first acquire a knowledge of the language and its technique, next be trained in the use of this technique, and thirdly be made familiar with the classics of the language. Grammar study, composition writing, and reading of the classics have been the means employed in the schools of all times to attain the three ends mentioned.

What has just been said must be modified considerably if the course of language study embraces more than one language and literature. The Greek schools stand alone in this that they developed freely and harmoniously the philological element of education upon the basis of the native language and literature. Homer's poetry marks the beginning of polite literature as well as of the art of language. Rhetoric is the organon of the art of oratorical composition, and the γραμματική (grammar) is the elementary discipline of rhetoric as well as of literature. One part of grammar, γραμματικὴ ἀτελεστέρα, dealt with reading and writing, and another part, γραμματικὴ τελειοτέρα—which was again subdivided into γραμματικὴ τεχνική or μεθοδική and γραμματικὴ ἐξηγητική or ἀνάπτυξις τῶν παρὰ ποιηταῖς τε καὶ συγγραφεῦσιν—dealt respectively with the technique of speaking and writing and the interpretation of the classics.[1] The Romans adopted the same system, but dealt with two languages and literatures; and their grammar, too, expanded into a science dealing with encyclopedic knowledge.[2]

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[1] Wower, *De Polymathia*, 1603, cap. XIX.

[2] Quintilian (*Inst.*, I, 4, 2 sq.) mentions two branches of grammar, "recte

Medieval education, though derived in its main features from the ancients, inverted the traditional order of importance. Too much importance was attached to the formal disciplines, grammar and rhetoric, while literature, for which these branches should prepare, was treated as a subsidiary subject; and in consequence the art of language was deprived of what is its inspiration. The national literatures developed independently of higher learning. Chivalric education, which was based upon the national literatures, was regarded as the antithesis of clerical and scientific training. Thus the Middle Ages divided what should have been joined to form the foundation of a deep and rich culture. Though the Renaissance revived the ancient traditions—the science and art of language and the reading of the classics were again correlated with one another, and the power of literary expression was the chief aim of education—yet there was after all only an indirect connection between the schools and the great writers of the day. Nor did the ancient classics hold undisputed sway, since the modern languages were also struggling to secure a place in the curriculum beside Greek and Latin. Modern education attaches due weight to the study of both the grammar and the literature of the ancient as well as of the modern languages; it is also interested more than any previous period in the content of the classics and includes, besides, the history and the science of literature. But, in keeping with its tendency to stress theoretical knowledge to the detriment of practical skill, modern education devotes less attention to the art of language and the power of literary expression.

In keeping with the language and literature studies as pursued at the present time, we shall have to study the subject, not only according to the division given above, but also according to the different languages and literatures studied in the schools. We shall, therefore, treat successively the art of writing, the science of language, the art of language, literature in general; and then deal with the educative content, first, of the ancient languages, next, of the modern foreign languages, and, finally, of the mother-tongue.

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loquendi scientia" and "poetarum narratio." To the first were added the "scribendi ratio" and the "emendata lectio," *i.e.*, textual criticism, and the "judicium," *i.e.*, æsthetical appreciation. Encyclopedic knowledge, history, music (prosody), astronomy, etc., were treated in the "poetarum enarratio."

CHAPTER XVI

The Art of Writing

1. "Who could," says Diodorus, "worthily extol the art of writing? It alone preserves among the living the memory of the dead; and it alone enables men, though great distances separate them, to converse as though present to each other. The same art excludes all ambiguity from the wording of contracts and thereby guarantees the validity of international treaties. Writing alone preserves to all future ages the sayings of wise men and the oracles of the gods, the sciences and the culture of the forbears. We may therefore truly say that, while we are indebted to nature for life, we owe our humanized life to the mental culture inaugurated by the art of writing."[1]

The Greek historian thus connects the art of writing with the boons of social and intellectual life. But Cassiodorus, the Christian scholar and teacher, takes a higher view and shows how it assists in saving and purifying the soul: "O happy undertaking, O praiseworthy zeal, to preach to men with the hand, to open the lips with the fingers, to be silent and yet most active in saving souls, to oppose the power of darkness with the pen; for every word of the Lord written down is a wound inflicted on Satan.... What a glorious spectacle for the speculative mind to observe the pen gliding along and writing the message and the words from heaven, for thus the same instrument (*arundo*, a reed; also, a pen) with which our Lord's head was struck in His Passion, proves an effective weapon against the malice of the Evil One."[2]

The art of writing is of such universal need in human life as to admit of as many different evaluations as life itself. All writing is appraised according to what has been expressed through it: the content determines the value of the writing. And thus there is also a great diversity of opinion regarding the educational value of the art of writing, but no one denies that it must be one of the first subjects to be taken up in school. The art of writing is everywhere regarded as the most elementary of all attainments; and the rudiments of other branches of knowledge are also described as the ABC—a term taken from the teaching of writing and reading—of the respective science.

[1] Diod. XII, 13.

[2] *De instit. divin. litt.*, cap. 30.

2. To learn to write is the first step in education; and this first step is important in several ways for all remaining steps. Learn to write, and you command the most general means employed to give permanency to the things of the mind; language will ever after appear to you, not merely as something spoken, but as something real and objective. In reading and writing we have the first analysis of language: speech is resolved into words, and words are resolved into syllables and letters. After we have learned to read and write we recognize that speaking —which was because of its spontaneity not a matter of reflection before—is a complex action proceeding in larger and smaller units. "The mechanism of the tones," says Jean Paul, "teaches by fits and starts, but the dial of writing is continuously showing finer divisions; all writing—whether in the elementary form that is taught by the writing master or in the advanced form that borders on that of the professional author—enlightens the mind." Writing is the first thing that draws the mind's attention to something intangible and visible only through the symbol, and hence it is the door leading to the field that contains the higher philological elements. To learn to read and write is real intellectual training, which is all the more important for being the first mental discipline to enter into the child's soul-life.

But with this intellectual element there is connected a technical and æsthetical factor. He who would learn to write, must not only trace his letters correctly, but must also conform to certain rules governing the beautiful. While learning to trace his characters, the young pupil is introduced into the world of forms, and acquires the ability to direct and control his movements after the model placed before him. The relation between writing and the arts of design varies with the style of the writing and the character of the arts. The strokes of the brush needed to write Chinese require the technique of an art; the initials of the medieval monks are the beginning of miniature painting. But to-day we appreciate characteristic penmanship more than calligraphy, though we still admit that there is a relationship between the art of drawing and the art of writing; and consequently we demand that drawing prepare for writing, and that the latter seek an idealizing element in the arts of design.

In so far as there is always some, even if only an indirect, relationship between the conforming to some model and the conforming to the model of morality, and inasmuch as all conforming to laws and rules fits ultimately for the conforming to

the highest law of righteousness, it must be admitted that even the most elementary of attainments may be made, though only to a limited degree, a moral force. It has been said that the will of the child is strengthened by learning the ABC: the concentration and energy required for this early task of the school are a wholesome discipline for the unsteady impulses, and the seriousness which it demands is a foretaste of the seriousness of life.

The mere learning to write has, then, its own educational value, and this value is based on different grounds than the educational value attaching to the ability to write. Still, we may not overlook that the art of writing is after all but a means to an end, and that it is learned, not for its own sake, but for the sake of the content to be expressed in writing. Educationally, it is a harmful policy to attach undue importance to the technique of writing. The schools of China devote too much time to the teaching of reading and writing, and in consequence the science of language is almost crowded out of the course; the elements of reading and writing take up long years of hard study, and calligraphy is the flower of education. This is a mistake, because the art of writing should never be taught without stressing that it is merely a means to a higher end. The teacher of reading and writing must ever bear in mind that we read and write only for the purpose of reading and writing something, and he must begin in the very first lesson to habituate the pupil to look always for the meaning, the content, of what is read or written. This demand, that all writing be treated as the form containing a content, is of paramount importance. All other questions—*e.g.*, whether the pupils should first learn to read and then to write, or whether single letters or combinations of letters or normal words are preferable—are of less importance.

CHAPTER XVII

The Science of Language

1. The science of language, especially its elementary part, grammar, has been founded, as was shown above, to meet a twofold need: it is, first, the key to the interpretation of written works and, secondly, the guide for the correct use of language. And the science of language holds so important a place in the curriculum chiefly because it meets so well this twofold need.

In fulfilling the first function it only continues what was begun by the art of writing: the latter explains the meaning of the external forms and the visible symbols of thought, and the science of language interprets the inner forms and the intellectual symbols of thought. In so doing the science of language is analytic, but it is synthetic when it teaches the use of language. To teach the use of language, it must synthesize the language elements, discovered in the analytical process, and raise the language expression to conscious and grammatical speech.

Both functions of grammar, the exegetical and the technical, will counterbalance each other in case the language that is made the subject of grammatical study does not differ at all, or only very little, from the language of everyday life. But if there is a great difference between the language studied in school and that spoken by the pupils at home, *i.e.*, if the grammar study deals with a foreign tongue, then greater attention must be given to the technical side of grammar, because it is less difficult to learn to understand a foreign language than to acquire the skill to speak and write it. In teaching a foreign language, grammar will primarily be "*recte loquendi et scribendi scientia*" (*ars*, *ratio*), and exegetical grammar may come to be but an application of the technical. Language teachers generally favor this view, for they believe that the chief educational value of grammar consists in securing the correctness of written and spoken language. In the face of this tendency, educationists have ever demanded and must still insist that the science of language shall not lose sight of its relationship to the classics, for the latter do not only contain a rich educative content of their own, but are also the best models for all speaking and writing and remain the standard authorities for the very rules of grammar. Still, there have been educationists who went to the opposite extreme and set too low a value on technical grammar; they regarded language as a mere shell, which is of interest only for what it contains, or as a mere "tool," which we learn to use only for the sake of the work we can do with it.

2. However, the technical and the exegetical side of grammar are of equal importance for the educative content of grammar study. The classics do not constitute the whole of language; they are but a part of it, and the living speech is poured around them as about the fixed structure; and thus grammar study includes something besides the exegetical application of its rules.

The purpose of grammar is, not only to teach the understanding of language, but also to make the pupil conscious of the *how* and the *why* of the daily use of words, forms, and constructions, so that his everyday speech may become an intelligent activity. We should be placing the father after the child and the cause after the effect, if we failed, while dealing with what was said in the past, to deal with the speech of the present. What Aristotle says of the mathematical construction is true here also: "What is potential is made actual, because thinking is actuality; potentiality, however, proceeds from actuality; therefore, we understand these things by making them" (*ποιοῦντες γιγνώσκουσι*).[1] Understanding and producing, understanding something and doing it oneself, knowing and doing, are as closely connected in the field of language as in that of art. The ability to write and read is the path leading to the understanding and appreciation of literary classics, just as the accomplished painter or musician is well qualified to interpret the masterpieces respectively of painting or music. After we have followed in our work a certain rule, we shall the more readily recognize it as a law. Our own attempts at imitation, be they ever so feeble, interpret a masterpiece as well as any explanation; nay, they interpret it much better, because they are an *argumentum ad hominem*. Hence grammar may not give up the characteristics of the *ars;* it may not refuse to teach the art of language, for this would detract materially from the aid it gives to the interpretation of the classics.

But it must be allowed that, even aside from the application of language, the structure of language, the whole of the interlocking media employed for expressing thought, the systems of forms, the vocabulary, the phonetic laws—that all these represent rich material for educational activity. Language is a *σοφόν*, the product of a wise, even if unconscious, creative force; and to study its operations is assuredly no idle task. Though language is but a tool, its construction is so meaningful and instructive that it well repays a purely theoretical study and a technological analysis, and we need have no fear lest the tool that we are examining be employed for menial purposes.

3. Grammar, then, in so far as it deals with language as such, does not lack an educative content. But this content must be complemented by that of exegetical grammar, the art

[1] *Met.*, IX, 9 fin.

of reading and understanding, the discipline that deals with language in so far as it embodies thoughts. The purpose of exegetical grammar is to control and make fruitful the intercourse established, through the medium of language, between mind and mind, *i.e.*, to co-ordinate the intellectual content embodied in a book with the reader's circle of thought. Exegetical grammar does not, like technical grammar, regard language as material for exercise; nor, like purely theoretical grammar, as a subject of speculation; but considers language as a medium of thought, to be made as transparent as possible. This language study which is pursued for the purpose of getting at the meaning of what is written, insures not only the understanding of an author's meaning and the intellectual gain which this implies, but also the mental training afforded by the necessary intellectual operations.

To illustrate: the understanding of a text is based upon the analysis and the synthesis of its language elements; the mind first takes up the individual elements, next joins them, and finally looks back again from the product of the latter operation to the individual elements. The sense is obtained from the words, and the words must be interpreted in the light of the whole; the mind must separate what is joined in the text, and must supply what is but indirectly and vaguely conveyed by the words. It is significant that the languages have named the mental faculty after these intellectual operations: in English there is the term understanding; in German, *Verstand* from *verstehen;* in Greek, σύνεσις from the joining together, and ὑπογαμβάνειν from seizing from below; and in Latin, *intellectus* from reading between, *inter* and *lego*.

The grammatical understanding calls, however, for a further progression as well as another regression: from the given case we pass to the grammar rule, *i.e.*, we ascend from the individual to the general; and then we return to the special application of the rule, *i.e.*, from the generic down again to the specific. In this way the text is explained in the light of the rule, and the rule itself is understood as governing the given case. If the pupil is trained to study his text grammatically, he will not rest satisfied with grasping the sense, but will strive to give an account of every form and construction occurring in his reading. While the understanding as such inaugurates a reciprocal action between the whole and its parts, the grammatical understanding inaugurates, besides, a reciprocal action between the generic and the specific.

Thus technical and exegetical grammar—which embraces both the study of grammar and the interpretation of authors—offers an educative content both rich and homogeneous, and to neglect either of its two parts would mean a loss to the other part. It would, therefore, be wrong to study grammar with a view only to the aid that it renders in the interpretation of authors; though some educationists have maintained that such aid is the only proper function of grammar study. But the efforts made in favor of this view have effectively checked the inroads of formalism and have also disclosed certain advantages of language study that had been previously overlooked. For instance, the attacks made upon the ancient classics led, on the one hand, to the realization of the formal value of language studies and, on the other hand, to the appreciation of the material knowledge (*Realkenntnis*) embodied in language itself.

4. Language study has been called intellectual gymnastics for conferring upon the mind benefits similar to those obtained by the body from gymnastic exercises. Gymnastics, we know, makes the body supple, not only for the exercises that are actually gone through, but for other more general purposes; and, similarly, language study affords intellectual gains beyond that of the command of language. One of these special gains is the exercise afforded in applied logic. A further gain is the habituation to the painstaking care and exactness required by grammar, for grammar is, indeed, a severe taskmaster, or, as an old saying puts it, an "*animal mordacissimum gravissime ulciscens injuriam sui.*" Finally, philological precision (*ἀκρίβεια*) is justly esteemed as the fruit of thorough language studies; and even micrology, which may be called intellectual microscopy, is of value, provided it does not ignore the great things while attending to the minute.

More lasting than these results are the effects that language study produces upon the language consciousness (*Sprachbewusstsein*) in general. In fact, a man who knows language only in its spoken form and to whom human speech is but a spontaneous activity, can not have a reflex consciousness of language. This undeveloped language consciousness does, it is true, not preclude the possibility of using language effectively, even in poetry or oratory, yet it holds the mind in the bondage of the word. Such a mind can only connect automatically the word and the thing signified; it will ever be restricted to use such terms as have accumulated in the memory through the unconscious imi-

tation of the language of its environment. The first effort toward destroying this bondage of the word is made when the pupil learns to write, for then it will dawn upon the mind that the word has its own objective reality and is not a mere attribute of thought. But only persistent and thorough language study can transform the language consciousness and make it reflex. The reflex language consciousness can distinguish the actual relationships of things from the veil that language has thrown over them; it can separate the thought from the language form in which it is expressed, and can freely employ the media of language in the service of thought. It is familiar enough with the workings of thought and language to keep apart the thought functions from the language functions. Still, it is not equal to the task of understanding the relationship between the two, for this is a problem that has as yet received but little attention in science.

To study thoroughly the grammar of the mother-tongue is one way of transforming the language consciousness. Another way is to learn foreign languages in a practical way, *i.e.*, just as we learn our mother-tongue. A third way is to study foreign languages upon the basis of their grammar. Each of these methods has its advantages and disadvantages, and each leads to the discovery of different phases of the educative content of language.

5. The study of the grammar of the mother-tongue may be compared to the demonstration of a machine in operation. In such a machine we see the function of the parts, but these will not stop; we know the whole and consequently are but little tempted to enter deeply into its parts. Similarly, in learning the grammar of his mother-tongue the pupil is expected, not to learn anything entirely new, but rather to acquire a new knowledge of what he is already skilled in, so that he may subsequently be able to give an account of the correctness of his speech. There is this advantage in studying the grammar of one's mother-tongue that the theoretical knowledge and its practical application go hand in hand, and that the gradual clarification of the language consciousness may be connected with its spontaneous activity. But, on the other hand, there is this disadvantage that the mother-tongue is so intimately interwoven with the pupil's nature that it can never be possessed, in his view, of the same objectivity as a foreign language, and on this account the instruction dealing with it appears less important to him than that

dealing with a foreign tongue. In a word, the living body of the mother-tongue can no more satisfy all the requirements of the first grammatical instruction than the human body can prove a good subject with which to begin the study of natural history. However, Greek education—whose grammar course dealt with Greek grammar only—evidences that the educative content of the grammar of the mother-tongue is no mean one, and that this branch may, therefore, well serve as a preparatory subject for the science and art of language. Our elementary instruction in the grammar of the mother-tongue has occasionally been underestimated, but more frequently it has been overestimated; yet, if properly conducted, *i.e.*, if its purely analytical character is brought out, it may well make the language consciousness reflex.

The learning of foreign languages, even if only ἀλόγῳ τριβῇ, *ex usu*, *i.e.*, through practice and without the study of grammar, is well adapted to set the thought free from the bondage of its verbal expression; for it shows the possibility of expressing one and the same thought in different words. By passing over into the territory of a foreign language the mind is freed from the dominion of the mother-tongue. From this point of view there is a deep truth in Goethe's saying, "He who does not know a foreign language, does not know his own mother-tongue." The mastery of a foreign language gives the pupil a second language consciousness. The Greeks called Kekrops, who knew Greek beside his mother-tongue, a διφυής, a man of double nature. Ennius, being master of Latin, Oscan and Greek, boasted of his "tria corda." A saying attributed to King Theodoric as well as to Charles V. reads, "We have as many souls as we master languages." The same idea is expressed in the proverb, "Tantum valeo, quot linguas caleo." This hyperbole expresses the limitation of the practical learning of languages: the practical learning of languages produces not one language's consciousness, but a multiplex language consciousness; it ensures, indeed, the knowledge of languages, but not the full development of the language faculty.

6. This full development of the language faculty is the function of the grammatical study of foreign languages. Here the foreign idiom is assimilated according to a regular system and is always correlated with the language consciousness. The grammatical study of a foreign language has this advantage over the grammatical study of the mother-tongue that it deals with an object that is seen at rest and that appears new and, there-

fore, more interesting. It offers all the benefits of the practical learning of foreign languages and others besides: it frees the thought from the bondage of the expression; associates the thought content with different language symbols; separates the thing expressed from the form of the expression; and it does all this by a leisurely, gradual, and painstaking process.

These functions will be illustrated in the following. Each language spreads over the world of things and ideas a different net of relationships, and the meshes of this net are found in different places. The net unites the ideas in different groups and connects the thoughts by different combinations. The words, forms, and constructions of different languages are not coextensive; and the circles of their meaning as well as of their use are not concentric, but eccentric. This relationship, which is the foundation for the real enrichment and transformation of the language consciousness, can not be brought out properly except by the grammatical study of a foreign language. To enrich and transform the language consciousness, we must follow up the threads of the net described above; we must stop at the knots; and must follow up the multitudinous circles of the use of words and forms. Friedrich August Wolf observes that we should know and closely observe the impressions which every nation stamps upon its ideas through the respective words; for, says he, "it is only in this way that we shall begin to be at home in the intellectual world, and only thus can we appreciate and properly use the intellectual treasures which we brought from home. The different modifications of similar ideas will force us to note their dissimilarities and to look from a new point of view at such ideas as were familiar to us under other thought-forms. The result of this comparative study of words and expressions will be, not a poor collection of many synonymous symbols, but a rich supply of media for analyzing and synthesizing our ideas—and this supply can not be obtained in any other way."[1]

This fact dawns upon the beginner in Latin as soon as he realizes that the Latin words, though meaning the same as the English, are still not of the same value. The young student grows impatient, perhaps, to find the dictionary giving several Latin words for the one English word, and vice versa; he is puzzled at the fact that so many English idioms can not be translated into Latin; and the strange constructions of the Latin

[1] *Darstellung der Altertumswissenschaft*, in *Museum f. Altert.*, I, 1, 91 and 103, in Arnold, *Fr. A. Wolf*, Braunschweig, 1861, II, p. 114.

language make his first translations a disagreeable task. But having advanced farther, he will learn to understand what had at first appeared as the odd and peculiar ways of the Romans; he will grow familiar with the idioms of their language; he will begin to regard the Latin words as individuals of which one must not demand everything, and will also begin to understand the individuality of Latin constructions; he has become alive to the fact that an English sentence must be conceived in a new spirit before it can be expressed in Latin, and that the same holds for Englishing a Latin sentence: the foreign leaven has begun to influence his language consciousness. Thinking in Latin is still a long way off, and the young student must take many a step before his mind will grasp, not only the logic, but also the ethos of the language of the Romans. Ultimately the Latin studies will redound to the better understanding and command of the student's mother-tongue, and his first translations are the beginning of the work that promises all these splendid results.

Learning a foreign language is like taking a trip abroad. Such a trip is of great benefit even if the traveller has no experienced guide and must view the sights in the order in which they happen to present themselves. But the trip would prove of greater benefit if a guide were at hand to correlate the new impressions with the traveller's previous knowledge by presenting the sights in systematic order and by properly focusing them for the mental eye. The grammar of a foreign language is such a guide—though pedantic and whimsical at times—for conducting us into the territory of a foreign tongue; it opens our eyes to what is small and apparently insignificant; it directs us to assimilate the foreign elements by piecemeal, and compares the new with the old; it opens up new vistas, which, but for its service, we should have missed; and because of its slow progress it assures us of a thorough understanding. But the grammar of a foreign language does even more: it teaches us how to travel in general; it teaches us how to travel with profit in our native land, and how to look at the old from new points of view.

7. This comparison may direct our attention to a further educational gain accruing from the study of the mother-tongue as well as of a foreign language—the acquisition, *viz.*, of material knowledge (*Realkenntnis*). Even the child when first learning to speak acquires, along with the words, ideas of things; there is a parallel increase in his stock of words and his knowledge of

things. Every instruction imparts knowledge of both words and things. Every branch of the school curriculum has its own terminology, and the farther one advances in any subject the more familiar will one grow with its terminology. The name of a thing will always serve best to retain the explanation given of a thing: much geography is embodied in the term "climate," and the term "tribunus plebis" implies a whole chapter of Roman constitutional history. Rhetoric rightly advises the pupil, when looking for thought-material, to examine carefully the wording of the theme assigned for his composition, to note the sense of each word and the meaning that usage gives to it.

Language embodies the thoughts of a nation; the science of language is a science of the nation; and the study of the grammar and the dictionary are departments of the history of civilization. The Latin language is part of Rome's legacy to the world; the Greek language is part of the Hellenic legacy; and the German language, part of the Germanic. The language of a nation is not only the form for containing part of the national spirit, but is itself a part of the national spirit. It is not only a key to treasures, but is itself a treasure-house. You may regard language as a shell; but you must, to be true to fact, regard it as a shell that is intergrown on all sides with the kernel. But it is more correct to apply to it what Goethe says of nature, "It is neither kernel nor shell, but at once both kernel and shell." The method adopted by a nation in building up the structure of its language, in planting its roots, in spreading its branches, in pruning its forms, in changing and elaborating all its various forms of expression — the manner in which all this has been done reveals as much of that nation's character and soul and spirit and of its habits of thought, as the manner in which the same nation cultivated its fields, encouraged trades and industries, used stones for building, and invented musical airs. Language, in a word, is the most delicate emanation of the national spirit, so delicate, in fact, as to appear to gross minds as only a form of other emanations.

For the explanation of this important element of language studies we are indebted principally to Friedrich Schlegel, the father of comparative philology, and to Wilhelm von Humboldt. Humboldt maintained that every language is the embodiment of a peculiar world-view, and that the mastery of a foreign language should therefore offer a new viewpoint for studying the world. And when we consider that every language contains the entire woof of the conceptions and ideas of a part of the race, we realize

that there are good grounds for Humboldt's view. Modern philology has begun to apply this view scientifically, for its chief aim is to enter by way of the language into the intellectual life of the different peoples. Comparative philology has attempted even to reconstruct, with the words common to kindred peoples, the circle of thought and the manner of living of prehistoric ages. Rückert, the wonderful linguist, has noted the educational value of this phase of language content; and he clearly restates Humboldt's view, thus: "The science of language is the key to man's mind and his manner of thinking.... Every new language that you learn will set free in you a spirit that had till then been held in bondage; and this spirit, once it is set free, will soon be actively pursuing original lines of thought. It will open up to you vast treasures of past ages, will let you feel as a nation once felt in the past, and you will find this form of humanity in yourself.[1]

8. The language studies supply much material knowledge, and thus supplement the study of the literature and of the history of a nation. We shall never fully understand the classics of a nation, particularly the poetical works, unless we enter deeply into the language in which they are written, and which is intergrown with them. Matter and form are not two different sides of the classics, but two elements that are interwoven down to the smallest details. The Homeric poetry and the Homeric language are twins; or, to use Shakespeare's phrase, "two lions litter'd in one day."[2] The Homeric expressions are moreover Homeric antiques and specimens for a museum of words; they explain other remains of antiquity, and are themselves precious relics of a past age. Ancient words are, indeed, relics of a bygone civilization. No one will deny this in the case of words that designate some specifically ancient things; but it is likewise true in a much broader sense. There is always only one word and it alone that adequately expresses a thing; and this is true, not only of technical terms from the field of political and social antiquities, but also of feelings, opinions, ideals, virtues, duties, and moral concepts in general. Penetrate deeply into any system of philosophy, and you will note that very much of its philosoph-

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[1] Karl Mager (*Moderne Humanitätsstudien*) and Theodore Waitz (*Allgemeine Pädagogik*, §§ 18 and 25) have shown how this idea may be applied in the classroom.

[2] *Julius Cæsar*, II, 2, 46.

ical thought has been contributed by the respective language.[1] And, on the other hand, you may construct out of the language a nation's natural and moral philosophy as well as produce an encyclopedia embracing the knowledge that was common among the people. But an encyclopedia of this kind implies such a knowledge of things as will supplement what we know of the life, the customs, and the institutions of the respective people.

In modern languages this is seen still better in so far as their vocabularies reveal clearer traces of history; and a historical analysis of the vocabulary of a modern language will give an outline of the history of the respective people. In the German language, for instance, the words of foreign origin plainly show the successive movements that influenced German national life. The introduction of Christianity brought in many terms; but these words, which are of ecclesiastical origin, differ from those dating from the secular intercourse with the Romans. The words derived from the Arabic are relics of the age when the Moslem controlled the Mediterranean and instructed Europe in mathematics and medicine. The age of chivalry contributed its quota of French words; the Italian merchants and musicians brought in terms from their tongue; the period of discoveries added idioms from distant climes; the Renaissance reopened the stream of the ancient languages; and the Rococo period brought the invasion of French elements, while the universalism of the modern age added the most varied precipitates from international historical activity. A dictionary of foreign terms, compiled from this viewpoint, would supplement the history of German civilization; yea, in one respect, it would itself be a history of German civilization.

Much remains to be done to unearth all these elements of material knowledge and the full educative content of language. But a special place should be given—either in, or at least parallel to, the regular grammar course—to onomatology, the science of words. Yet some of the material knowledge belonging to language will be brought out even without making special efforts to that end. Thorough language teachers have ever tried to grasp the national traits expressed in the words and to impart to their pupils the amount of history and nationality that they represent.

[1] The Greek term εἶθος is of basic importance for Greek philosophy, because it signifies at one and the same time "form," "species," and "idea," and thus prepares for the conception that the formal principle of things determines their species, and that we can ascertain the species by a processs of thinking.

9. What is discovered by deep study may still be hid from the great body of pupils and teachers, and it is to be regretted that language instruction separates only too frequently the word from its meaning, and stimulates the interest in form to the neglect of the interest in content. Hence, even Zeno distinguished two kinds of pupils: the philologists, who were interested most in the content of the words, and the logophiles, who were interested in the form only.[1] The latter, especially those who develop into pedants and who waste their time on hair-splitting arguments, have always been the butt of the opponents of language studies. These opponents assert that grammar study warps the pupil's faculties, because it hedges in on all sides the growing mind with minutiæ and quibbles of all sorts, and nourishes it with vacuous formalism and dry rules. Why, so they argue, human reason is deliberately excluded from grammar study, for the last appeal in questions of grammar is, not to human reason, but to the "*usus tyrannus*"; still, the widest scope is granted, so they contend, to the subjective whims of the individual, and where the philological knowledge ends, there the wrangling of the philologists begins; and the envenomed squabbles of the philologists are a striking proof of the inhumanity resulting from the study of the vaunted humanities.

Strictures of this kind miss the point at issue. Nevertheless, they draw our attention to a fact which we shall have to stress time and again: even valuable educational elements may be abused and thus do much harm to the young mind, warping it perhaps for life. Such strictures may also open our eyes to the further fact that language studies do not constitute the whole of the philological element of education, and that the latter, even in its entirety, must be supplemented by other educational elements.

CHAPTER XVIII

The Art of Language

1. Technical grammar does no more than lay down the rules for the correct use of language. But the art of language is the proper field of rhetoric, since it teaches the pupil how to make his style clear, beautiful, and vigorous. The evaluation of the educative content of rhetoric depends, on the one hand, upon

[1] Stob. Flor. 36, 26.

the evaluation of the art of language in general and, on the other, upon how much of this art is thought to be at all teachable; and these two considerations have given rise to different opinions of the educational value of rhetoric.

However, the command of language, whether in oratory or poetry, in daily intercourse or in writing, is of such importance as to have been regarded at all times as one of the aims of education. All men acknowledge that language is a sharp sword and an instrument of power: eloquent speech moves the hearts and wills of men; the orator and the poet sway the masses, and the impassioned preacher moves the sinner to do penance. To the orator and poet, language is thus an instrument of power. But to him who is aiming at inner formation, it is a personal ornament and an element of beautiful living. Language is the spiritual material of the plastic faculty; to expresss in words what we feel and think is as pleasant as it is helpful in clarifying and developing the interior. Many-sidedness, to be complete, must not only receive, but also respond to, the variety of impressions. To fully possess a thing, the mind must not only receive it, but must impress upon it the stamp of its own individuality and subject it to the assimilating force of thinking aloud.

The ancients as well as the Humanists regarded the art of language in this sense, *i.e.*, as an ornament and an instrument of power. They looked upon rhetorical and poetical eloquence as the choicest fruit of education. Though they did not altogether ignore the factor of native gifts, still they attached great importance to the training of the *fari posse;* and the technique of oratory and poetry they held in high esteem. With such a conception of the art of language it was to be expected that the content was considered of less importance than the form; that the artificial was preferred to the artistic, and perfect technique, to sense and spirit; and that the pupils produced only words when attempting to write orations or poems. However, even the ancient as well as the Humanistic devotees of the art of language recognized that the results of these vacuous and insincere efforts were morally harmful. But as for remedying the situation they did no more than insist that the true orator and poet must be good and honest, and that the beauty of language must be complemented by nobility of soul.

2. In contrast to this older view, the realism of modern education is inclined to underestimate the educational value of the art of language. It considers natural talent and its use in

practical life to be indispensable to literary power; and the practice of having pupils manufacture verses, seek fine phrases, or borrow fine turns of expression, it condemns as worse than useless. For in such exercises, we are told, "the style outruns the sense," and the form, not the expression of thought, is the chief thing.[1] In the face of such principles we must turn elsewhere to establish the true educational value of the art of language and the disciplines subsidiary thereto; and in the course of our inquiry we shall also ascertain what is true and what false in the ancient view of the subject.

He who would speak, or write, or make a poem, must have *something to say*. An art of language that does not proceed from a content—whether of thought or feeling to be embodied in words—is unreal. But this content can not be properly expressed unless the speaker or writer takes into consideration the expressions that have been coined for the ideas, concepts, and feelings; *i.e.*, he must pay due regard to the thoughts and feelings embodied in language through the work of many generations. The speaker or writer can not express his ideas clearly and fully until he finds the right equation between these two factors, the mind content and the language content. It is a case of changing the old rule, "*proprie communia dicere*," to read, "*propria communibus dicere*." To express oneself involves, as it were, a compromise between one's individual thought and feeling and that collective thought and feeling which is embodied in language. If too much scope is allowed to the latter, the speaker drifts aimlessly on and is borne along by the stream of language. But if, on the other hand, too much scope is allowed to the individual's thought and feeling, the writer will miss the many concepts, apperceptions, and turns of thought to which language has been adapted through the long and varied thought activity of the race; and this will not only reflect upon the form of the composition, but will also materially enfeeble its content. The true art of language is an art of intellectual wrestling: the writer must struggle and wrestle with the language so as to subject its powers and instruments to his individual thought; in no other way can language be brought to do justice to this specific thought. The art of language is also the

[1] Newman, *Idea of a University* (London, 1902, pp. 282-283), speaks of the "absurdity of making sentences the very end of literary labour," where "the style outruns the sense," and refers to Isocrates and Dr. Johnson as examples of this practice. Of Isocrates and some of the Sophists he says that they "were set on words, to the neglect of thought or things."

art of the advocate: the writer appears at the bar of language, and, while holding firmly to his own intellectual content, pleads strongly for as great a share as possible of the intellectual property of the nation.

3. In this point of view, the art of language affords a double training: it necessitates, first, the working up of the objective content of thoughts and feelings embodied in language and, secondly, the elaboration of the subjective thoughts and feelings. It teaches us more than merely the use of the conventional instruments of language, because it shows us how to master those media that are employed to express adequately whatever has been recognized as true; and in this respect it cultivates, not only the taste, but also the sense of truth. Hence the art of language is no mean educational instrument. At the same time it is a real art in that it establishes a coincidence between subjective and objective thought—the subjective thought being worked into the material of language, and the objective thought being placed with all its powers at the service of the subjective thought. The works of literary art embrace, then, not only poems and orations, but every piece of writing as well as every saying that is so worded as to lose in strength or beauty if any change were made in its form. Now, there are certain phases of this art that may well be made the subject of teaching and exercises, and consequently there is ample opportunity in literary art for the technical disciplines. However, the art of oratory, which is restricted to oratory, and prosody, which is restricted to poetry, are of less general inportance than rhetoric, which, taken in its broadest meaning, is "the art of adapting discourse, in harmony with its subject and occasion, to the requirements of a reader or hearer" (Genung). In view of this double aim, rhetoric may also be defined as the science dealing with the linguistic expression of thought and with language as embodying thought.

The ancient evaluation of the art of language is therefore justifiable to a certain degree. Moreover, there is a mean between the formalism, to which the ancient conception may lead, and the materialism, which attends to the content to the utter neglect of the form. And this happy mean points the way to the attainment of what the ancients strove for in their art of language—the spiritualization of one's personality.

The relation between language technique and the classics is a much less debated question: there can be no doubt that

practicing an art will open the eyes to beauties never noted before; and rhetoric study and rhetoric exercises are the straight road leading to a deeper understanding and appreciation of the great books of the world. When comparing the masterpieces of literature with his own exercises, the pupil will appreciate and enjoy the former much more than if the teacher merely drew his attention to their beauties. "There is a greater educational gain," says Jean Paul, "in writing one page than in reading a whole book." He might have added that writing that one page will also teach the pupil how to read a whole book. The mastery of any art involves a long apprenticeship; and even if our purpose is, not to imitate the masterpieces, but only to understand and appreciate them, yet even then must the hammers resound and the chisels carve the blocks of marble (*müssen die Hämmer tönen und die Meissel knirschen*).

CHAPTER XIX

Polite Literature

1. The masterpieces of language are the philological element (in a narrow sense) of education and thus represent one of the chief elements of general education. They are the monuments that the spirit of the language and nation has reared; and as a sacred trust does each generation transmit them to its successors. They are eloquent witnesses to the progress made by a nation in the beautiful expression of the broadly human. They are the cream of what a nation has recorded in writing and the basis of polite learning—nay, the basis, to a degree, of the sciences in general.

Horace has well said of the poet that

> "His lessons form the child's young lips, and wean
> The boyish ear from words and tales unclean;
> As years roll on, he moulds the ripening mind,
> And makes it just and generous, sweet and kind;
> He tells of worthy precedents, displays
> The example of the past to after days,
> Consoles affliction, and disease allays."[1]

Poetry deals with sensuous materials, but is borne aloft on the wings of fancy and draws upon the first source of language forms and so quickens and refreshes human speech, which would

[1] Horace, *Epist.*, II, 126 sq. (Conington's translation.)

otherwise degenerate under the hard usage of daily life. But over and above this service—though not a small service indeed—it refreshes the whole content of human life: it infuses into man's life new and sublime elements and thereby prevents him, who is absorbed in material pursuits, from losing sight of the ideal. A sublime mission has been committed to poetry: it is to raise man above the low and common; also to familiarize him with the world of feelings, pictures, and thoughts; and thus to satisfy in somewhat his longing for the ideal. Poetry must employ, in accordance with these manifold functions, many various forms, and its domain must be universal in extent. Hence it employs the epic with its lavish richness of action and character, the drama with its strong passions of sympathy and fear, the soul-stirring song, the pithy epigram, the passionate and moving appeal of the oration, the charm and variety of the story, the novel, the description, the dialogue. And for his material the poet draws upon the whole world: he lets us see the outer world from within and in a spiritualized form; and the inner world he visualizes by giving, as Shakespeare puts is, "to airy nothing a local habitation and a name." He expresses feelings in the manner of thoughts, and to thoughts he gives the form of feelings.

Thus poetry touches at one and the same time the life of the soul at many points. The pictures of poetry, taken from the sensuous sphere, stimulate the intercourse between the mind and the world of sense; and the feelings and thoughts contained in the pictures direct the mind to the inner world. With its message from the distant and the past poetry invites and also trains the mind's eye to look upon what is remote in time and space. Because of its perfect form, little, if any, effort is needed to retain poetry in the memory. Furthermore, both the form and content of poetry serve for cultivating a refined taste. Again, poetry depicts quick action and changing situations, and in this way readily wins our interest; and it is often the only means for letting a dull mind realize the meaning of interest. In as far as it represents the joys and the sorrows, the hopes and the fears of the human heart, it enkindles sympathy; and by expressing emotions of all kinds and all degrees it renders the reader sensitive and delicate of feeling. Being born of the ideal, it gives eloquent expression to the higher life of the spirit and thereby stimulates the heart's longing for the noble and the sublime.

2. These purifying, idealizing, and humanizing elements of polite literature are interwoven with the elements of the soil

whence it grew. Polite literature is the creation as well as the mirror of the national genius. To love and cherish its literature is absolutely necessary for the self-preservation of a nation; and to have its sometime disowned poetry return to honor is synonymous with the rebirth of the nation. "They had no poet and they died," is written on the tombs of all forgotten races.[1] The Greeks had a perennial source of patriotism in the works of Homer; and the Romans, in the poems of Vergil and Horace. Dante and his successors gave the Italians their national consciousness when the political and social institutions failed to do so. The enthusiasm of the German Wars of Liberation was inspired by the rediscovered German poetry of the Middle Ages.

In as far as polite literature is a monument of the past history of a nation, it contains a vast wealth of knowledge. The classics are pictures of the successive ages: examine them, and your horizon will be extended beyond the present and you will learn to interpret the past. The work of discovering the tone and color of a certain age, of collecting and combining the characteristic traits of a particular period, will train the inventive powers of the pupil and will teach him the art of combination. Besides, if the making of a complete picture is the aim of our study of literature, this latter subject will include an element even of the arts. True, the study of the classics of a foreign nation does not promote the spirit of national patriotism; still, it contributes the more toward the development of the historical sense. As the foreign language appears more objective and is, therefore, better adapted than the mother-tongue to analytical study, so the picture of an age that lets us forget for a time the here and the now, elicits and trains the powers of observation and penetration much more than the picture of an age to which the student is bound with the very fibers of his being. This educative element of literature has been recognized only since philology came to be considered the reconstruction of the past culture and life of a nation,[2] for this view demands that the reading and study of the classics shall do on a smaller scale what philology does on a larger. Consequently, the philological function proper of language and literature studies is the extending of the mental skyline.

These studies contain, however, other elements of knowledge besides those mentioned. Poetry assimilates, because of its

[1] W. J. Long, *American Literature*, New York, 1913, p. 208; cf. R. C. Trench, *English Past and Present*, London, 1908, p. 4.

[2] Vol. I, ch. XXIX, 1.

universality, the most diverse elements of knowledge and so it becomes the source of many-sided information. The ancients found in Homer the motives and the beginnings of all research.[1] Dante embodied in his *Commedia* all the learning of his time, so that the commentaries written on the poem assumed the proportions of a veritable encyclopedia.[2] Other poets also offer much valuable information: the ancient poets inform us about the different peoples and their customs and about the fauna and flora of the different countries, while the modern poets treat of living conditions, historical events, and natural objects of all sorts.

3. Though the classics must be recognized as one of the foundations of all education, still a cultured nation will not rest satisfied with the national and foreign classics of the past, but will create, with more or less dependence on classical literature, a liturature of the day to voice the spirit of the present. This literature of the day is generally not made the subject of formal study, but forms the bulk of the educated man's reading and is an interesting and withal instructive subject of the conversation of cultured folk. The father of poetry admitted that men prefer to hear the latest song;[3] and, indeed, it is but just that the admiration for the creations of the past should not stifle the eloquent expression of the spirit of the day. On the contrary, the interest enkindled by the works of the past should stimulate the production of enduring literature. In this way a literature will be created that is the subject less of formal study than of cultural enjoyment, and which is appreciated less for its solid content and its perfect form than for its charming clearness and its connection with the interests of to-day. If the spirit and form of our present-day literature is not too far removed from the content and form of the standard literature of the past, a mutually beneficial relationship may grow up between our literary studies and our literary enjoyments: the classics will supply the standard for judging the latest issues of the press, and the fresh breezes wafted from the latter will prevent the dust of the schools from settling on the former. The ancients and—to give one of the few instances in modern times—the Germans in the period of the Classicists enjoyed this enviable position.[4] But conditions may also be such as to prevent the study of books and the enjoyment of books from going

[1] Vol. I, ch. IX, 2.
[2] Vol. I, ch. XIX, 6.
[3] Homer, *Od.*, I, 351, 352.
[4] Vol. I, ch. XXIV, 4 and ch. XXVI, 6.

hand in hand: the schools will then deal with the flowers that have been pressed by pedantry and which have in consequence lost their color and odor; and for their enjoyment men will turn to the shortlived, if not poisonous, flowers of the newspaper and the magazine. Between the pedantry of the school and the swallowing of the literature of the day there will then be scant leisure and less inclination for solid and educative reading, and the intellectual profit from books will be a doubtful quantity.

4. There is another mistake which is frequently made in schools and which deprives many students of the full profit to be gained from the study of literature. The study of the classics, especially as pursued in the schools, is assisted by certain subsidiary disciplines, such as exegetical grammar, history of literature—which traces the development of literary activity—and æsthetics—which deals with the forms of literary art and lays down the principles of literary criticism. Further aids to the study of literature are commentaries, literary encyclopedias, anthologies, chrestomathies, etc. All these aids have each their own use, and the disciplines mentioned possess—as we have shown in the case of grammar—their own educative content. The history of literature is a safe guide among the multiplicity of books produced in the past; it gives an account of the growth, the development, and the decline of a nation's literature, and traces the relationship between literary and other intellectual movements. Æsthetics also performs a valuable function, for it analyzes literary works philosophically; gives an account of the beautiful and the sublime; makes the unconscious enjoyment conscious; and finally lays down the general principles governing all literary activity. These three disciplines—grammar, history of literature, and æsthetics—join into a unit the study of different languages and literatures; they establish fruitful intercommunications between language study and other departments of knowledge, and so enlarge the former's zone of influence.

However—and herein lies the chief danger—these subsidiary branches may press to the fore and obscure what is of prime importance, *viz.*, the appreciation and whole-souled enjoyment of the world's great books. The explanation of these books should ever be but a means, not an end in itself. Their form should never be studied to the neglect of their content. Historical notes and æsthetical comments should ever remain but secondary and not crowd out the text. Yet this important rule is often violated. The pupils, for instance, are actually

encouraged to talk about and read around the classics instead of enjoying to their hearts' content their beauties. It is likewise a mistake to give the pupils, instead of the classics, only extracts from them. Such literary titbits can not give the pupils an idea of the whole work. Consequently the pupils will not learn to appreciate properly the greatness of literary masterpieces; and will, likewise, miss the ideal intercourse with the author's personality, because such intercourse is granted only to those who peruse the entire classics.

Hence the teacher of literature should steer clear of the two extremes described in the preceding. On the one hand, he must not allow undue scope to the subsidiary disciplines and, on the other hand, he should not present too varied a selection of reading matter. Either of these two practices would deprive the study of literature of its choicest fruits, and would, to use an ancient phrase, "take spring out of the year."

CHAPTER XX

The Ancient Languages

1. Though we may say that the general principles of the educational value of the philological element hold for all languages, we must admit that these principles apply in a particular way—and that not only on historical grounds—to Latin and Greek.

The Latin and Greek languages are the best material for practicing the art of understanding. The linguistic understanding involves, as was shown above, a progression and regression from the individual to the whole, and implies the interpretation, first, of the sense through the words and, then, of the words through the sense. Consequently, the peculiar and educative features of this operation will be brought out the more, the more direct is the path leading from the word to the sense and the less need there is of accessory concepts and of regarding what is conventional and arbitrary. Now all this is the case with the ancient languages. Compared with the modern languages, they are simple and straightforward in expression;[1] despite their pliability, they have not lost the ruggedness of primitive diction; and with all their wealth of color they

[1] It is not a matter of accident that τί λέγεις; may signify: What are you saying? as well as: What do you mean?

are not gaudy or garish. Their forms and words still answer their original purpose and in this respect they are like stones that retain the rough edges that they had when quarried.

Furthermore, the etymology and syntax of Latin and Greek afford a splendid training in logical thinking: Latin affords an elementary, and Greek a higher, course. An immanent logic is the characteristic of the Latin language, particularly of its grammar. Latin etymology is concise and symmetrical enough to allow the beginner to reap very early some fruits of his studies. Latin syntax has clear-cut distinctions, but these are not difficult to understand, and may be stated in the form of rules. As the study of Roman law is incomparably superior to any other subject for the purpose of getting an idea of law and courts in general, so the study of Latin grammar is the best subject for studying the nature of the grammatical rule and the technique of its application. Both the law and the grammar of Rome have in them something of intellectual drill-regulations, while the grammar and philosophy of Greece represent a system of intellectual agonistics. The forte of Greek lies in its nice distinctions and delicate shading: its wealth of words and etymological forms render possible the nice distinctions; and the abundance of particles and syntactical constructions allow one to express the greatest variety of relationships and to shade off delicately the wording of an expression. But amid all this fulness and pliability the law is—though not always obvious—ever present, and resembles in this regard the trellis-work which the densely grown vines hide the more the more closely they cling to it.

The ancient languages are particularly well adapted to transform the language consciousness: on the one hand, they are closely enough related to our modern languages to be capable of transforming a language consciousness that is based on these; and still, on the other hand, they differ so much from our modern languages as to necessitate a transformation of the language consciousness. In order to appreciate this proper degree of difference, we must consider the case of such languages as are either too different from each other or too much alike. If the foreign language that is to be learned is too much like the mother-tongue, it will prove too weak a ferment: the mind will never outgrow the thought and speech forms of the mother-tongue, but will only modify them; the "intellectual world," to which the mind is introduced, will be joined without any material change to what was previously in the mind. But if, on the

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contrary, the foreign language is too different from the mother-tongue, it may, indeed, elicit a strong linguistic interest, but the new linguistic knowledge will remain isolated and will exert on what was previously in the mind but little influence. But Latin and Greek occupy the happy mean between the two extremes. Whether the pupil be of a Romance, a Germanic, or a Slavic nation, he will, when learning Latin and Greek, be dealing with languages that are related to his mother-tongue, that have also supplied a certain amount of its vocabulary, and that have influenced more or less its syntax. Thus the workshop of thought and speech to which the pupil is introduced, is not altogether strange to him; still he will see so many new methods that he will have the opportunity not only to learn new ways of doing things but also to increase and improve his technique.

2. Goethe has beautifully said of the ancient languages that they "call us with a strange voice to a higher life;" and his words contain a still deeper truth if applied to the entire content of life embodied in Latin and Greek. This life is likewise close enough to us to let us enter into it with our feelings; and distant enough, too, to let us overlook its defects in the presence of so many characteristic features that are undeniably great and noble. The intellectual intercourse with Greece and Rome familiarizes the young with "the thoughts and sentiments of a refined humanity;" here they may study "the history of mankind passing before their minds in the simple, yet glorious and immortal, pictures of noble men." The happy combination of great ideas and perfect form has made the Greek world the *beau ideal* of all that is noble and refined; and to it the arts, the sciences, and education must ever turn for inspiration, depth, and spiritualization. "The Greeks have succeeded," says a modern thinker, "in establishing themselves as the models of a beautiful humanity; and the Spartans at Thermopylæ, the Athenians at Marathon and Salamis, the death of Socrates, the imperial figure of Alexander the Great will probably continue to the end of time to be celebrated as the classical examples of self-sacrifice, heroism, and the spirit of enterprise—not as though other ages had not produced instances of the same deeds and that at times with purer motives, but nowhere else has the greatness of these deeds found such eloquent and beautiful expression as with the Greeks; here the imagination need not remove the bitter shell before it can enjoy the sweet kernel within."[1]

[1] Lotze, *Mikrokosmus*, III, p. 295.

Similar statements might be made of certain forms of Roman life. The great nation of imperial dominion, of the law, and of the *religio* maintains its place beside the nation of poets and sages; and its place is nearer to us who belong to the sphere of Latin civilization. The Greek spirit is accessible by the way of Rome—this is the lesson taught by history, and it is a false Philhellenism that does not heed this lesson. Without the aid of Rome the culture of Greece could not have struck deep roots; witness the weak footing that Greece culture secured among those nations to which it was introduced directly from the Greeks and without the intermediary agency of the Romans.

But besides the great, noble, and typical elements that render the writings of the ancients a never-failing source of instruction and enjoyment, we must note also their fullness of life, their abundance of moral and psychological phenomena, and their infinite variety of human things:

> "Quidquid agunt homines, votum, timor, ira, voluptas,
> Gaudia, discursus."

Hence the reading of the ancient classics imparts knowledge, not only of history, but also of life and things. Moreover, the materials presented are such as are intelligible and congenial to the young, because the ancients are, in fact, representatives of the youthful age, and their poetry and prose have preserved much of the freshness and originality that characterize the achievements of the creator and inventor and that appeal to the unsophisticated minds of young people.[1]

[1] If we examine any text from the ancient poets or historians, we shall realize that we have made no unwarranted statements. Let us take, for instance, the beginning of Cæsar's commentaries of the Gallic War, the *Bellum Helveticum*, I, 2-28, to see how many human activities and relationships are treated in that brief space; we shall mention only the key-words: Orgetorigis conjuratio, persuasio Helvetiorum, eorum motus, iter tentatum, consilia Cæsaris, Gallorum querelæ, Helvetiorum postulata, minæ, perfidia, Cæsaris querela, excusatio, venia data, occasio oblata, clades, fuga, deditio, pœna. All this will appeal to the pupils and they will soon be interested in the narrative, for the happenings are vividly described, and their own little world contains much that is kindred in spirit; they, too, are taken up with undertakings, with persuasion, attempts, plans, complaints, demands, and even threats, excuses, forgiveness, unsuccessful attempts, punishments. Thus the world, of which they here obtain a view, is not altogether strange, but still strange and novel enough to arouse their curiosity. But could not the same result be obtained from a detailed historical presentment of the subject or from a good translation? By no means, and for the reason that neither the presentment nor the translation can secure as much attention to the details as the reading of the original text necessitates; the latter alone will force the pupil to be self-

3. Latin and Greek supply, therefore, to the fullest extent, all that can be gained from the philological element of education. But they do even more: they are the depositories of the educational gain of philology as such, because this science was born of them. A teacher of the Middle Ages called Greek the teacher of languages and Latin the queen of languages;[1] and this is true in the sense that the Greeks have given us grammar, while the Latins have built the royal road leading to the science of language. The different branches of philology—Germanic, Romance, Slavic, Oriental, etc.—have been patterned after classical philology. For our philological training we must still turn, as did our ancestors of the 15th and 16th centuries, to the ancients. English, Germanic, or Oriental philology is unthinkable without at least the rudiments and general principles of classical philology, for the latter are indispensable to thorough research and the scientific study of language. But even where there is no question of scientific research, but of purely cultural studies, the same holds true: the terminology of grammar and the dictionary, of prosody, rhetoric, history of literature—and that in the case of any language whatsoever—will ever remain a "*terra incognita*" to one unfamiliar with the ancient languages, particularly with Latin. Though these disciplines have been adapted to the modern languages and though some knowledge of them can, therefore, be obtained without a knowledge of the ancient languages, still he who lacks this knowledge is like a mechanic who has but a half-knowledge of his tools: he is ever liable to make grave mistakes; his knowledge is at best but a borrowed element; and his skill is naught but routine. As he who would teach a language scientifically must be trained in classical philology, so every teacher of any language, even if only of the mother-tongue, should be at home at least in the elements of Latin. The normal school that excludes Latin from its course of study, severs the language teaching of the elementary school from the roots of all science of language. Again, if the classical schools continue to demand less and less of the ancient lan-

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active enough to assemble the individual details into one large picture. A rapid reading of historical sketches has, of course, its own advantages, but will never render superfluous the reading with the philological miscroscope. With regard to students attending lectures on sociological subjects it has been observed that those who have had a classical education, even if only an elementary course, are quicker and surer of perception than such as have no knowledge of the ancient languages.

[1] Vol. I, p. 227.

guages, the inevitable result will be the decline of language studies in general and, therefore, also of education. In this case our own literature, so largely influenced by the ancients, would become, in great part, unintelligible to us; because we must, on account of our historical development, turn to the ancients for the key to our own spiritual possessions.[1]

4. Thus philology shows obviously how much our knowledge is conditioned on classical antiquity, and Fichte could rightly say, "The ancients are the repositories of the language treasures of the scientific world."[2] No science could dispense with the terms it has borrowed of the ancients. But the sciences have borrowed of the ancients more than a great part of their terminology, and Boeckh has well said: "Antiquity contains the beginnings and roots of all disciplines, the primitive concepts, and, we may say, the elementary knowledge of mankind; these elements naturally prove the proper subject for early school education. The rudiments are especially important; they generally embody the most spiritual, the ἀρχή, the principle, which will often in the later treatment be obscured unless one revert continually to the elements."[3] These beginnings, however, are of a speculative nature, and to neglect them estranges the mind from the basic element of philosophy; but this is very harmful as the philosophical element is the unifying bond of all science.

But even from a purely historical viewpoint, our sciences have begun in Greece and have developed during a long Latin period which extends down near to our own days. Consequently, we must still be Latinists, just as were our forbears, if not to express our thoughts and to describe the results of our researches, then in order to be able to utilize the findings of the older scholarship. The classical studies are, in a word, the ABC of higher studies, and the last centuries have brought no change in this respect. It might be objected that higher studies are not co-extensive with scientific studies, and that there are certain modern sciences that may be pursued, applied, and even advanced without a scientific knowledge of their materials. This may be true of the individual representatives of a science

[1] "When we turn to literature, we find that Latin is influential everywhere—particularly in our classical authors—by allusion, by quotation, by actual domestication. Many of our great English writers are permeated with Latin." Monroe's *Cyclopedia of Education*, III, p. 645.

[2] *Werke*, VIII, p. 97.

[3] *Enzyklopädie und Methodologie der philologischen Wissenschaften* von August Bœckh, ed. by Bratuschek, Leipzig, 1877.

—*e.g.*, the master of the experiment, of the calculus, etc., may contribute to the advance of his respective science. But taking the entirety of the representatives of any science, there must be some to carry on real scientific research work. But it would be unwise to differentiate the preparatory training of the two classes of scientists; the young scientist should be fitted to take up any phase of his special field. He should, therefore, be equipped with all that is required to study the history of his special subject, since no science may ever be out of touch with its historical development: the historical treatment of scientific problems and questions is no less important than the experimental study of them. A continued neglect of the scientifico-historical element and, therefore, also of the philosophical element of the so-called exact sciences must, despite all other increase, result in their impoverishment and decline.

Granted for a moment that the future belonged to the so-called exact sciences alone, still their representatives could never dispense, aside from the philosophical element, with the command of language, for this is the sole medium for expressing what they have found; and there can be no doubt that the proper use of this medium demands as much exactness as the researches themselves. Furthermore, the representatives of these sciences could never dispense with the historical review of their respective discipline with its achievements and failures, for such a review is the sole guarantee for the proper continuity of the work of research. Now both these obvious needs are met through the aid of philology, and so the A B C of the latter remains part of the equipment needed for every science, even the most modern.

5. Though we can not to-day express the motive for the study of the ancient languages so briefly as Erasmus did when writing, "*His duabus linguis omnia ferme sunt prodita, quæ digna cognitu videantur,*" yet we may say that the different departments of knowledge are still more or less closely connected with Greek and Latin, and thus these two languages continue to be, in this respect, the depositories of all that is worth knowing.

All nations base their cultural studies upon ancient and venerable writings, which, being raised above the narrow interests of the day, are valued as the teaching content of the schools and are reverently transmitted as such from age to age; they are the mental food of whole generations, and men are indebted to them for the continuity of their spiritual life. Such are the

Vedas of India and the *Kings* of China. The European nations had to go beyond their own national past to find such books; they received the foundations of their culture not from their fathers, but from their teachers, their intellectual fathers, and, in the first place, from the Romans. With the European nations the sacred books and the classical books are not the same, though this was the case with the Hindus and the Chinese: the sacred books of the West embody the teachings of Christianity and the precepts of the Old Law, while the classics of the schools are of classical antiquity. But despite this difference, the ancient classics occupy in modern education a position that is analogous to that of the canonical books in the East. To give up the ancient classics would be, not progressive, but disastrously regressive; it would mean the destruction of a historical creation, and no high-handed measures could ever fill the gap. The ancient classics are, besides, so closely intergrown in our case with the Christian religion, that any attempt to dislodge the foundation of our intellectual and æsthetical education must necessarily involve the religious and moral foundation.

However, the classical studies would, if disavowed by the State, find a refuge with the Church that herself dates from antiquity, and here they would again be sheltered as they were during the storms of the Barbarian Invasion. "The Church carries along, whithersoever she goes, her Latin language and her dogmas developed in the Greek forms of thought, and so adown the long ages she is closely pursued by the wisdom of Greece and the power of Rome. And even to-day, on the shores of the Ganges, the sons of the haughty Brahmans are learning Latin and studying Aristotelian-Thomistic philosophy; and thus is reënacted in our own day the scene of a thousand years ago, when the sons of the Franks and Saxons trained their minds by using the Latin language and the dialectic of Aristotle."[1] What the Humanist Johannes Sturm said of Latin, is, then, still true—though in a sense different from that the writer had in mind: "*Hujus linguæ honestissima est comparatio, sanctissima exercitatio, quam Deus hospitalem esse voluit, quam late terrarum orbis patet hominibus.*"[2]

[1] Adeodatus, *Die Philosophie und Kultur der Neuzeit und die Philosophie des heil. Thomas von Aquino*, Cologne, 1887, p. 54. The value of the ancient languages for the training of the clergy is well proved by Pope Leo XIII., in his brief of Sept. 8, 1889, to the French episcopate.

[2] That a world language of science is indispensable and that Latin alone is fully equal for this purpose, being more adequate than any artificial language (Volapük, Esperanto) yet invented, is the thesis of Diels' lecture delivered before the Berlin Academy of Science (*Sitzungsberichte of 1889*, pp. 579 ff.).

6. This eads us to a further factor in favor of the classical studies: they are one of the bonds that connect the European family of nations. Wherever we find any similarity in the education of the children of different nations, we shall not mistake in tracing it back to the influence, chiefly, of the classical studies; and the Latin schools, whether known as gymnasiums, lycées, or colleges, are the homes of culture whence issue the threads which, though not obvious to the eye, are still strong enough to connect nations. Under certain circumstances, however, the classical studies may also prove a powerful aid to the preservation of the nationality of such peoples as find their national spirit and habits and customs threatened with extinction. The English, though at home in all the corners of the globe, still retain their national traits, and this fact is due to their clinging, not only to their national traditions, but also to their old classical schools. The Germans of the Baltic provinces are as firmly attached to their higher schools and the Roman law as to their German manners and customs, being rightly convinced that these factors are the mainstays of their nationality. Those Slavs that are exposed to Magyar influences look upon the ancient languages as the bond that connects them with the West, and they rightly fear lest any weakening of the classical course involve a strengthening of the denationalizing elements. When the German spirit was reborn in the throes of the Wars of Liberation, the classical studies were also reinstated in their former place of honor. The nation waxed enthusiastic over the victory of Arminius, but the ancient Romans were on that account not suspected of endangering in the 19th century the permanence of Germanism. The Germans simply prized all that had ever redounded to the glory of their race, and among these glories of the past they found also the enthusiastic study of the ancient classics. It was only the short-sightedness of some modern educationists that found an opposition between the national interest and the classical; but these men do not realize that with the passing of the classical interest the German classicists would become unintelligible, and that the eloquence and wisdom of the ancients is the foundation of the *deutsche Eloquenz und Sapienz.*

In this point of view, the Latin language, with which we are, in every respect, more closely connected than with the Greek, appears to be more important. Greek is an ornamental plant and one that we should be loath to miss; but Latin belongs to our flora, and its cultivation has first made us gardeners. Our

pronunciation of Greek and Latin, an apparently insignificant point, is characteristic of our attitude toward the two languages. In the case of Greek it was an easy matter to supplant Reuchlin's pronunciation, which was modelled after the living speech of the day, by the pronunciation of Erasmus, which was the result of scientific reconstruction; and if this had not been done three hundred years ago, it could easily be accomplished to-day. In the case of Latin, however, no serious attempt has yet been made to abolish the medieval pronunciation; we speak the Latin as our forefathers spoke it, but not as the Romans spoke it; and, in this respect, Latin is to us a *sermo patrius*, and not at all a dead language.

CHAPTER XXI

Modern Foreign Languages

1. The intercourse between different nations necessitates the learning of modern foreign languages. But this learning becomes a subject of cultural education only after an intellectual intercourse has been established between the different nations, when the foreign tongues are regarded as keys to the foreign literatures. Such an intercourse was early established between the members of the European family of nations—the chief reason being the common presuppositions of their culture. Chivalric education was based upon the knowledge of the Romance languages, particularly of French; during the latter Renaissance one could not gain admittance to the higher society of his own country without a command of French. This led, especially in Germany, to an adulation and aping of all things French, and this servile spirit held sway until the Wars of Liberation and the Romantic movement in literature awoke the German nation to a realization of its own power and greatness. But the Germans have preserved, though at present keenly alive to their national glory, an open eye for all that is beautiful and admirable in the achievements of other peoples. They have, in more instances than one, taught other nations to understand and appreciate their own writers and artists. For instance, they have reawakened the interest of the English in Shakespeare and, to some extent, of the Italians in Dante; and the idea of a world-literature is of German origin.[1]

[1] Longfellow would seem to expect of the Americans a similar catholicism of taste: "Let us throw all the windows open; let us admit the light and air

The modern literatures have this advantage over the ancient literatures that they are the products of Christian peoples, and that many of the modern works have a pronounced Christian character. But in regard to simplicity and unconscious greatness, the modern classics are far inferior to the ancient. But for this they compensate by their greater variety of poetic forms and styles; and being nearer in content and spirit to our way of thinking, they can be utilized more easily in education.

Modern classics are more easily rendered accessible by translations, and some of these translations have themselves attained to the rank of classics. But even the best translations will never render useless the study of foreign languages, for the perusal of the original text is, because of the very slowness of the process, more thorough and affords a better opportunity for a many-sided study of the subject treated. Again, the original text brings us much closer than any translation to the spirit of the respective nation; and only in the original can we realize the harmony between content and form, which is an important factor for developing a good taste. Finally, the knowledge of the foreign languages is the only key to such works as have not yet been translated, and may thus prove a valuable aid to scientific studies.

2. Another important factor in foreign language studies is the linguistic value of the modern languages; and, in this respect, each of the European language groups has its own special value. The Romance languages show the interesting process of the sprouting of new branches from a trunk that is old and gnarled; they are the after-spring of the ancient languages. The Slavic languages retain some very old formations; witness their wealth of cases, in which regard Sanskrit alone can be compared with them, and their euphony, to which Greek alone has anything analogous. The Germanic languages occupy a middle position; they are radical, but their inflections have been greatly reduced; they resemble Greek in the wealth and variety of word-formations, and Latin in vigorous expression. Thus each nation may turn to its neighbors to supplement its own linguistic peculiarity.

on all sides, that we may look towards the four corners of the heavens, and not always in the same direction.... As the blood of all nations is mingling with our own, so will their thoughts and feelings finally mingle in our literature. We shall draw from the Germans, tenderness; from the Spaniards, passion; from the French, vivacity—to mingle more and more with our English solid sense. And this will give us universality, so much to be desired." (*Kavanagh* ch. XX).

But every living language will supplement the classical course in one important point: the ancient languages are dead languages and, therefore, are but written languages, whereas the living language is spoken and, consequently, demands that special attention be given first to pronunciation and accentuation, and then to the modulation and inflection of the voice. All this implies a discipline of the ear and the tongue; and classical philology has nothing analogous to this important factor.

However, it is extremely difficult to utilize in the classroom all the factors that constitute the educational value of the modern languages. The schools are hardly equal to the task of teaching the grammar and the linguistic side of the subject, and still less capable of bringing out the literary side of the modern languages or of imparting a practical command of them. The Berlitz method—which consists in placing the pupil, as far as possible, in the environment of the foreign country whose language is to be learned—presupposes mature and very industrious pupils and is, besides, grammatically inexact. On the other hand, home instruction in modern languages results generally in but a smattering of the foreign tongues, and even this is often obtained at too high a price—the neglect of the mother-tongue. The French and German chattering of the children harms the growing language consciousness, and the vacuousness of their foreign conversations fosters the habit of speaking without having anything to say; and the whole process deprives the children of the wealth of poetry with which their mother-tongue is freighted—nursery rimes, fables, and fairy tales. Hence the language study of the schools, though cumbrous and one-sided, still admits, on the whole, of less abuse, and its defects may more easily be corrected in after life. The efforts made to correlate the school instruction in modern languages with the practical needs of the pupil have brought some good results.

CHAPTER XXII

The Mother-Tongue

1. If true education means opening the mind to the foreign, without, however, estranging it from its native possession, *i.e.*, if it implies the assimilation of the foreign and the bringing out of that which is hid within, then the same relationship must obtain in language studies: the cosmopolitan interest in all

languages must be joined with an abiding interest in what is ours by birth and native right. While eager to derive profit from the foreign languages, both ancient and modern, we may not scorn the treasures held out to us by our mother-tongue. "The mother-tongues are the hearts of the nations," says Jean Paul, "and conserve and transmit love, life, food and warmth." Jacob Grimm calls "the inexhaustible supply of tales, legends, and history, which bring the past near to us," an angel guardian, "who is appointed by our fatherland to attend upon us, and the blessing of whose presence we learn to appreciate only when crossing the border of our native land, where the gentle spirit must forsake us."

A deep and full appreciation of poetry, *i.e.*, an understanding in which the fancy and the feelings combine in a vital union, can be learned through the poetry of our mother-tongue alone. No words but those of our mother-tongue can rouse the deepest emotions of our heart and strike its deepest chords, and they alone can voice the strongest feelings of the soul. The Latin hymns of the Middle Ages are probably the only instance of the adequate expression of feeling in a foreign idiom; and the extraordinary intensity of the religious emotions of the writers is responsible for this solitary exception to the rule that a man can truly express his feelings in his mother-tongue alone. To train the pupils to understand and appreciate the folk poetry of a nation, the teacher must turn to the songs and proverbs, to the tales and legends, that have been handed down in that nation for generations. Only by entering in this way into their own national literature can the pupils be prepared to understand the folk poetry of other nations, just as there is no other way to attain to the understanding of the artistic poetry of their own nation. And thus the native poetry blazes the way to the appreciation of all poetry and of every literature. The folk poetry of the Christian Middle Ages is important in the education of the young for the further reason that it counterbalances a one-sided cult of the ancients. Where a false classicism saw but chaos and emptiness, we see a picture that is painted in glorious colors, glowing with the light of Christianity—a picture that depicts a powerful world with strong-souled men, whose kinship we are proud to claim. The understanding of even the ancient world can not but gain from the study of medieval poetry, because the threads that connect us with the ancients run through the Middle Ages.

2. Compared with the folk literature, the artistic literature of a nation has a cosmopolitan character. It is modeled after the ancient and modern classics, and only in the light of these models can it be understood, although it may itself be used as an instrument for the interpretation of these self-same models. Sophocles and Goethe, Shakespeare and Schiller, Vergil and Tennyson, are reciprocal interpreters; and the instruction in the ancient languages should supplement the instruction in the mother-tongue and vice versa. In case the ancient classics are not studied in a school, the modern imitations of them may, to some extent, serve as a substitute. Certain works of the national literature may thus give some classes of the people some idea of classical antiquity, but there are other classes that must go to the source for their education.

The national literature furnishes the best materials for recitations and declamations, and also affords an opportunity for introducing an artistic element into their delivery. Foreign poems are ill suited to this purpose, because they necessitate the imitation of foreign methods of delivery. The songs that are sung in the school should also be taken for the most part from the national literature.

The mother-tongue should receive no less care than the national literature, though the methods of teaching it must obviously be different from those followed in teaching foreign languages. Jean Paul has justly called the mother-tongue the mother of tongues, implying thereby that the language consciousness is rooted in the mother-tongue. The philological instruction, however, should not transplant this language consciousness, but should plant it deeper and correlate all language study to the mother-tongue. The mother-tongue is the capital with which we start out in the educative process; and to increase it must remain our aim, even if the spirit of enterprise should lead us to foreign fields.

3. In this sense, all philological instruction should be an instruction in the mother-tongue also; and there is, in fact, no instruction that does not, to some extent, add to the knowledge of the mother-tongue. Still, we can not dispense with the special teaching of the mother-tongue, for the application of its grammar and rhetoric can be learned only by systematic instruction. The mind will ever continue to reside in the house represented by the mother-tongue, while it merely travels through the territory of other languages; and its permanent residence should be not

only supplied with the bare necessaries, but should be furnished with all that may add to the pleasure and comfort of its occupant.

In the beginning the etymology of the mother-tongue may seem to the pupil to be, unlike the etymology of a foreign language, a superfluous subject of study, for he is convinced that he is familiar enough with it. But once the pupil is more mature, this part of grammar may be made attractive and instructive by the historical treatment of the laws of inflection. This historical treatment can hardly be introduced into the instruction in a foreign language, as the task of becoming familiar with the present forms of the language is difficult enough; yet it is important for the mental development of the pupil that he acquire an understanding of the evolution of language.

The instruction in the mother-tongue should devote more time to the history of words, to the ramification of the language roots, and to the various uses to which words may be and have been put. All this is more easily done with the mother-tongue, because here there is little need of memorizing new words. More efforts should also be made to impart to the pupil a sense of the relationship between language and life. In the case of the mother-tongue we may still discover the origin of many idiomatic turns, pregnant expressions, proverbial sayings, etc. The teacher should have his pupil find the primary meaning of some figurative expressions, have them note the weakening or the strengthening in sense, and trace the causes why some words have lost entirely their original meaning. This field of language study has been neglected hitherto, and too much scope has been allowed to purely mechanical drudgery.

The phonetic side of the mother-tongue is another field that has hitherto not been cultivated enough. The mother-tongue offers, like the living foreign languages, good opportunities for disciplining the ear and the tongue: let there be system and method in teaching the right color of vowels and consonants. The rudiments of scientific phonetics may easily be mastered in the normal school; and thus the elementary school teacher may be brought, through a subject of the primary school, into contact with science.

III

THE OTHER BASIC ELEMENTS OF EDUCATION

CHAPTER XXIII

Mathematics

1. A Pythagorean ἄκουσμα reads, "What is the wisest of all things? Number. And what after it? The man who has given the things their names." Thus the ancients, while searching after the springs of knowledge, found the world of quantities and language. In our inquiry into the best methods of transmitting knowledge, we followed their example, with this change, however, that we gave the first place to language, as being the more universal medium of knowledge, while to mathematics, the science of quantity, we gave, because of its inherent wisdom, the second place.

Mathematics owes its high position among the subjects of education to two reasons. One is its content, the information, instruction, and directions, which it supplies by being the science of quantity. The other is its method, which is peculiar to mathematics and which assures it a unique place in the family of sciences.

Mathematics makes three distinct contributions to the content of education. There is, first, an elementary contribution. The science of quantity, especially its theory of numbers, elaborates, through its simple operations, the ideas of sensuous objects and the whole sensuous horizon so thoroughly that it exerts a far-reaching and practical influence on life, commerce, and trade. Figuring, measuring, weighing, etc., are indispensable to even the lowest form of trade or technical skill and are, consequently, the most widely useful contribution of mathematics. The second contribution is in character less elementary and more vocational: *viz.*, the mathematical knowledge required for those vocations that employ such of the applied sciences as deal especially with quantities, for instance, architecture, sculpture, engineering, military science, navigation, and commerce. The third contribution is the mathematical knowledge that is more or less necessary for the study of the pure sciences. Mathe-

matics is directly necessary for the natural sciences: the descriptive (especially mineralogy) the explanatory (especially astronomy—which was formerly treated as a part of mathematics—and physics), and the philosophical disciplines in general as well as for synechiology (the science of continuity, or of a constant principle uniting changing or multiple events). The ethical and historical sciences either have entire chapters dealing with mathematical materials or at least touch on mathematical questions. Mathematical geography and historical chronology use mathematics very extensively. Sociology uses statistics, and æsthetics deals with space forms and sound waves. The theory of music was formerly treated and taught as a part of mathematics. Psychology has at least made some attempts toward a statics and mechanics of the psychical processes, and the application of computations to a definite zone of the inner life has remained as a problem.

"Mathematics is the root and flower of the laws obtaining in nature as well as in the arts. It has led to the discovery of the laws of crystallization and of chemical compounds; it has told us the number of blossoms, leaves, and filaments, the size, form, and motion of the stars. It is the spirit which makes the great cathedrals strong and solid, which gives harmony to music, and measure and order to the works of the painter; it lives in the hexameter of Homer and in the choral measures of the Tragedians."[1] Because of these interrelations between mathematics and other sciences, the science of quantity has long been considered an indispensable preparation for pure as well as applied sciences, and thus obtained an important place in the curriculum even in cases where only its content was regarded.

2. But even before mathematics had begun to exert this material influence upon education, it was highly prized for its methods, its systematic structure, and its formal advantages.

Mathematics treats quantities as such, irrespective as well of the source whence they come as of the causal connection of the things represented as quantities. On account of this abstracting of the relationships of its objects, mathematics has fewer presuppositions than the other sciences. Arithmetic presupposes progression, number and counting, the laws of equality and inequality; it proceeds to addition, subtraction, multiplication, division, and mensuration; and then builds upon this foundation its whole superstructure. Geometry presupposes

[1] Raumer, *Geschichte der Pädagogik*, III, p. 341.

arithmetic and space, the latter being its own proper element, and then proceeds to construct upon the basis of these the space forms and to discover their relations. Though the presuppositions of these disciplines must be traced back to metaphysics and though their origin may, therefore, appear obscure, still to one looking forward they appear clear and simple, because they may be visualized and partly demonstrated by construction. Being thus relatively presuppositionless, mathematics can be taught scientifically to the young, and hence the pupil has an opportunity to work scientifically at a comparatively early age, when the other basic disciplines can be treated at best with "but a touch of the scientific method." (Schleiermacher).

Aristotle asks the question why a boy can be a mathematician, but not a philosopher nor a naturalist, and his answer is the following: Because the subject-matter of mathematics is obtained by abstraction, whereas wisdom and natural science are based upon experience. In these things a boy will, therefore, never attain to conviction, but will cling to words, while in things mathematical he is not denied the knowledge of the nature of the object (*τὸ τί ἐστιν*) dealt with.[1] The proverb says, "*Aliter pueri legunt Terentium, aliter Grotius*," but this is less true in mathematics than in philology: the teacher and the pupil follow the same methods in solving a problem of arithmetic and in making an elementary construction of geometry.

A further advantage of mathematics consists in the endless number of relations, combinations, and comparisons that are possible with its numerical expressions and space forms. The material of mathematics admits of more problems, of more experiments and tests, of more manipulating and operating, of more questioning and answering, than the subject-matter of any other science. Every combination of numerical expressions or of space forms is like a drawn bow: not every combination has tension enough, but one will certainly make the arrow fly; to find just this combination requires the work of both the theoretical and the practical reason.[2]

In this way a double mental activity will result. The mind is trained, on the one hand, to find and test combinations, to select such as prove convincing and useful, and to evaluate the resultant cognition. And on the other hand, the mind learns to find whole series of further combinations, resulting from the first, to draw the conclusions following from all these various sets of

[1] Aristotle, *Eth. Nic.*, VI, 9.
[2] *Supra*, ch. XI, 5.

proofs, and to assimilate the solid knowledge resulting therefrom. This double activity is best illustrated in the difference between the arrangement of an arithmetical problem for the purpose of calculation and the computation itself, and in the difference between the construction and the discussion. Herbart ascribes to the imagination the survey, the sketching of figures, the piercing and intersecting of bodies, and the stretching out of the infinite series. But "the progressing to the goal while remaining always conscious of its bearings" he ascribes to the understanding.[1] There is no doubt that the first function has in common with the function of the imagination that it is free in its movements and seeks a broad horizon, in direct contrast to the second function, which concentrates its attention on a narrow circle. The former affords the real enjoyment of mathematics, but the latter supplies the *disciplina mentis*, which is rightly considered a special advantage of the science of quantity; and both functions produce quick perception (mentioned so frequently by the ancients), evoke the mental powers, and stimulate intellectual curiosity.[2]

3. Being presuppositionless and admitting of unlimited mobility in its materials, mathematics is the science of problems. The more easily a pupil can be supplied with the means of solving a problem and the more striking is the contrast between solution and non-solution, between success and failure, and the more remote is the danger of mere guessing at a solution or of being satisfied with a half-and-half solution—the better is the problem educationally. Now all this is preëminently the case with mathematical problems. It is not difficult to survey what is needed for the solution of a given problem, and each problem occupies a more or less determined place in the whole system. The solution, however, of the problems may be controlled by the pupil himself; each mistake betrays itself; every case of carelessness is soon followed by the proper punishment: mathematics always carries along its own red ink. Thus it trains the pupil to be cautious in his statements and severe in judging. While the skeptical attitude impedes in other fields, it is helpful in mathematics; in mathematics even the pupil may experience the joy felt in allowing a truth to force itself upon his conviction.

[1] In his illuminating *Observations on the Exposition of Mathematics for Educative Purposes;* in *A B C of Sense-Perception and Introductory Works*, Transl. by W. J. Eckoff, New York, 1896, pp. 160 ff.

[2] Cf. Plato and, especially, Isocr., *De permutatione*, § 264 sq.

The systematic structure of mathematics is, like its method, peculiar and rich in educative factors. In his essay, *Mathematics and Languages, Contrast and Supplement*,[1] Bernhardi says of it: "Mathematics is a system, and as such consists of individual members, which, though detached from one another, are still intimately connected. These members are graded, and their combinations increase in difficulty and intricacy; they are additional circles drawn about one and the same central point. Despite their differences, the members are all intended for the same soul-faculties, and each sentence, though in itself an independent entity, is, nevertheless, representative of the whole science.... This articulation of mathematics makes each individual member a separate goal of one's efforts and lets the soul, once it has attained one goal, feel satisfied. However, because the one member reached is eventually recognized as closely connected with the one immediately preceding, the very articulation of mathematics enkindles the longing for further progress. The grading of mathematics facilitates progress; all the parts of the science being homogeneous, the mind gains in extensive strength; and the simple development of the parts stimulates the mental efforts the more."

The structure of mathematical knowledge is, in contrast to that of other sciences, especially the empirical sciences, not plain, but varied. The theorems present an intricate network; several ways lead from one truth to another, and one method of argumentation is but a proof and confirmation of another. From many theorems the knowledge descends by specializing or by adding new conditions; it goes sideways by modifying certain conditions; and it ascends by eliminating conditions and by generalizing the scope of application. The ascending movement is responsible for the discovery of the so-called permanence of formal laws, which frequently means a surprising increase of knowledge; witness the genetic continuation of the arithmetical series, the extension of the theorems of powers to negative and fractional exponents, etc. A further characteristic trait is the recurrence of analogous propositions and problems on the ground of other and higher presuppositions. Bernhardi's comparison of the concentric circles is not so well adapted to this phase of the subject as the comparison of zones, which are placed in tiers upon one another and which afford a similar, but broader,

[1] This essay was first published in 1818, but was reprinted in Bernhardi's *Ansichten*, pp. 215 ff.—Cf. the quotation from Plotinus, *supra*, ch. X, 2.

outlook. For instance, the theorems of equivalence recur among the theorems of similarity, and equivalence appears thus as but a special case of similarity; whole parts of plain geometry are met again, though enlarged, in solid geometry; other parts recur in trigonometry.

It is of interest to note how the intuitive mind of the Hindus regarded these advantages of mathematics. Bhaskara concludes his textbook of arithmetic, *Lilavati*,[1] with the following: "Let a spark of science enter the intelligent mind, and it will increase and spread out by its own force. As the drop of oil spreads over the water, as the secret entrusted to the wicked spreads abroad, as the alms given to the worthy poor increases, and as all these, though they be small, spread and increase, so science spreads of itself in the mature mind.... To grow in wisdom and to strengthen your mental powers, you must read and re-read the mathematicians. The elements of mathematics, written in a beautiful style and easily understood of the young, comprise the whole essence of figuring; they contain the explanation of the principles that are sublime and faultless."

4. While its material side makes mathematics a good preparatory subject for several sciences, its formal side fits it well to serve as a propædeutic discipline for the pursuit of science in general. Mathematics is a school of thought and of applied logic, and trains the mind not only for working with the thought-contents, but also for obtaining new knowledge. It habituates the pupil to ask for the *why*, and so ingrafts the speculative interest. It forms and sensitizes the scientific conscience, for it makes it impossible for the mind to rest satisfied with a half knowledge, and urges the pupil to go beyond the mere view and the variable opinion to that which is solid and fixed and past dispute. The language of mathematics, consisting partly of words and partly of formulas, is a school of scientific expression, for it habituates the pupil to embody what he has learned in signs that are brief, yet adequate, and which are not only symbols, but also objects of operations.[2]

Mathematics gives the young a foretaste of the θαυμασμὸς φιλόσοφος of the ancients, the philosophic marveling over problems, which is the specifically scientific emotion. Kant explained to a young apprentice a theorem of the segments of a circle and

[1] It was translated into English by Taylor in 1816 and by Colebroke in 1817.

[2] The algebraic expression $a + b$ is, like the concept sum, general, and we can figure with it.

its application to bodies falling freely, and remarks that "after the young man had grasped the whole, he was no less affected by it than by a natural prodigy." "And, indeed," adds Kant, "the peculiar combination and the diversified application of the rules of so simple a thing as a circle may well make us marvel. No prodigy of nature is so apt to make us marvel at its beauty or order, unless its cause, being less clearly seen, would cause the greater surprise, because admiration is the child of ignorance."[1]

5. Thus far we have touched upon, but have by no means exhausted, the propædeutic value of mathematics for philosophy. When the ancients, especially Plato and his school, extol mathematics as the "origin and mothertown of philosophy," and declare that it leads to truth and teaches the knowledge of laws, they have in mind something over and above what we have been discussing. Mathematics is to them the science of rational perception and the vestibule of dialectic, the science of the supersensuous. Plato says, in this connection, that mathematics "cleanses and revives that instrument of the human soul which perishes and is blinded by other occupations, while it deserves, certainly more than a thousand eyes, to be preserved, because truth can be seen with it alone."[2] This instrument is the *νόησις*, the mental perception that perceives the essence of things; and the mental operation that leads to it, is the *διάνοια*, the reflection that transcends the sensuous, the organ of mathematical perception. The numbers and the space forms stand midway between the sensuous things and the ideas, and are, as it were, a midway station for the mind that would turn from the sensuous world to the transcendental (*περιαγωγή*).

In this form the thought is peculiar to Plato, but every serious epistemology attaches a similar value to mathematics. Kant sees in the existence of mathematics, which implies the possibility of universal and necessary perception of quantity, a guarantee for the existence of rational perception. Unlike Plato, he does not recognize mathematics as the key to the transcendental field of ideas, but as the key to the transcendental field of the perception forms, which Kant thought proper to the subject, and so the science of quantity safeguards him against the vagaries at least of that empiricism which doubts all rational perception. Thus has mathematics proved the foundation of

[1] Kant, *Über Pädagogik*, edited by O. Willmann, p. 9.

[2] Plato, *Rep.*, VII, p. 527.

the speculation of philosophers of divergent views and in different environments. Its connection with theology, as found in Plato, Pythagoras, and the medieval teachers, is not so artificial as it might seem to many to-day.[1]

6. Mathematics thus affords the most varied preparation for the higher sciences. Still it does not of itself furnish the motives to go beyond its own field and to take up the higher sciences. On the contrary (and here we have an opportunity to note the harmful effects of a one-sided study of this branch) it is a charge frequently made against mathematics that it fills its devotees with self-satisfaction and contempt for all other sciences and their methods—a state of mind that is evidently irreconcilable with the scientific spirit. A one-sided pursuit of this science is undoubtedly harmful and may be the death of noble mental organs. Mathematics provides little food for the imagination or the feelings; only indirectly and under wise guidance will it meet the ideal tendency of the soul. Goethe is severe in his arraignment of its defects: "Mathematics can not clear the mind of one single prejudice; it can not cure stubbornness; it can not infuse a broadly human spirit; it is simply incapable of exercising any moral influence." But what he says is true only of what mathematics can do directly and of itself. Leibnitz finds fault with the false methods followed in his day in the study of mathematics, and says that this abuse had brought it about that "the study of antiquity and all solid research were a matter almost of contempt." Descartes says of the extreme mathematicians, "There is no more vacuous occupation than to busy oneself so much with numbers and imaginary figures, as though these trifles were the be-all and end-all of studies, and to waste so much energy on superfluous proofs, as though one would deprive himself, in a measure, of the use of reason."[2]

Mathematics is after all but one of the educational elements, and at that, neither the highest nor the most indispensable. It must needs be supplemented by philology, philosophy, and religious instruction, and must be correlated with the other branches of the curriculum—a subject that has as yet received but scant attention.

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[1] Vol. I, ch. XVI, 2.

[2] For the references see Dupanloup, *L'Education*, t. I, liv. 4, chap. 2, where these viewpoints are developed more fully.

CHAPTER XXIV

Philosophy

1. The educative process, if deep and serious, will be confronted at many points with the problems of philosophy. The eye of the mind is at first attracted by the variety of things and the diversity of the phenomena. But once it has grown sharper, it will try to penetrate into their interrelations: the eye will pass from the facts back to their causes; it will discern the necessary behind the accidental, and the rational behind the arbitrary. This is the transition from the empirical interest to the speculative, and the progress from the searching after knowledge to the searching after causes.[1] This tendency of the mind contains one of the forces that have created philosophy, and, though men may declare philosophy dead, yet this tendency will never die out and it is strong enough to recall philosophy again and again to a new and vigorous life.

A further impetus to philosophize is the tendency to reflect on life. Here the mind passes from the perception of a thing to the judgment of it. What it seeks is not so much an explanation as enlightenment. It is less concerned with the linking of causes than with the grading of values. This tendency is the direct result of the wide-awake mental life and the independent thinking that characterize education.[2] The ability to profit, not merely by our own experience, but also by that of others, to render an account on one's views and actions, to set up a standard for judging the views and actions of others, to illumine our daily life with thought, and to vitalize what we have thought by bringing it into contact with our past experience—the ability to do all this denotes a high degree of education and shows how the latter is akin to wisdom. This high point will not be reached except by one who is of a mature mind, who has spontaneously begun to reflect and judge, who has individually felt certain interests, and who has associated with the world and men. But the reflection which has been thus inaugurated must be guided by well-established principles, so that the various observations can be connected and harmonized with one another. We may not be satisfied with mere philosophizing; but philosophy itself must be allowed to furnish, one may say, the trellis-work for supporting the vines of the individual reflections; the

[1] *Supra*, ch. XI, 5.
[2] *Supra*, ch. IX, 1 and Vol. I, ch. XXV, 1.

individual thinking must ever remain in touch with the treasures unearthed by the world's great thinkers.

If conducted far enough, the speculative interest and the interest in enlightenment will meet in the search after a view of the world and of life (*Welt- und Lebensanschauung*). This view will extend its horizon as far as possible; science and art, poetry and reality, the present and the past, nature and history—all these the view of the world and of life will lay under contribution for materials to substantiate its claims. But the elaboration of these materials must be left to philosophy, and the latter can here give a good account of its universality as well as distinguish the ephemeral from the solid and permanent. Philosophy shows how the creative thinkers have conceived the different problems, and what progress they have made in their solution. Recalling the connection between the physical and the moral, philosophy projects the world-view into the life of the individual and demonstrates how the opinions strive to be verified by the maxims, how the conception of life seeks a counterpart and substantiation in the actual living. On account of this contribution to education philosophy is a strong element making for enlightenment and is ultimately a moral force.

2. The direct contributions of philosophy to the educative process are the following: deepening of the speculative interest, mental enlightenment, and a world-view. All three elements may be seen distinctly separate in time and duly graduated in the early and later periods of Greek philosophy. The pre-Sophists represent a speculation that is still experimental and tentative, though increasing in depth. The Sophists and Socrates are engaged in the work of enlightenment and are striking examples of the right and the wrong methods that may be pursued in this regard. Finally, Plato and Aristotle offer harmonious, unified, and complete views of the world and life, and their views are alike distinguished for their broad outlook and their moral depth. Plato comprised in his system all previous speculation. But Aristotle applied philosophy to the individual sciences, thus laying the foundation for the great influence that philosophy was ever after to exert on all the sciences and, therefore, indirectly on education also. Aristotle made logic the organon of science. He connected philosophy with literature when he treated poetics and rhetoric philosophically. In the department of natural philosophy he inaugurated the various descriptive disciplines. Political economy he supplemented by constitutional history. In

his speculative theology he furnished the Christian thinkers with the material for differentiating natural and supernatural theology.

The individual sciences have, in the course of their subsequent development, grown to be more and more independent, but it remains the function of philosophy to show their interrelation. As the science of principles, philosophy represents the unity of science in general; and within the domain of the individual sciences it is only through philosophy that any subject can be viewed from a broad and general viewpoint. Plato says, "He who is capable of surveying the whole is capable also of speculation;" and the converse of this is also true: "The speculative conception makes us capable of surveying the whole." Philosophy deepens and clarifies the sciences. It assists them in formulating their problems and in delimiting their fields of inquiry. It co-operates with them in developing their methods, and supplies their systematic structure. Philosophical training is hence a preparatory training for science, and the elements of philosophy are an essential part of a course of instruction that is to fit the pupil for the pursuit of science.

3. The school subjects themselves converge into the philosophical instruction, and this is a convincing proof that philosophy is essential to higher education. The language instruction trains the pupils in the use of concepts in so far as these are expressed in words, and logic teaches the use of concepts as such. In language instruction the concepts are treated as language elements, and in logic they are regarded as thought contents: but the two views belong together. Thought embodied in language disciplines the mind; but the choicest fruit of this discipline is obtained only after the mind studies in logic its own operations. Literature represents the results of intellectual, æsthetical, and moral activities; the explanation of the text is only the beginning of the analysis, and the further steps must be guided by psychological, æsthetical, and ethical principles. The moral gains to be obtained from literature and history depend, to a great extent, upon whether the moral reflections to which these subjects give rise are developed far enough to consolidate. But to do this, the teacher must be at home in practical philosophy, and the pupil must likewise have some guiding principles that he may apply to moral materials. High-flying, ethical and æsthetical disquisitions are, indeed, of little value. But neither will moral remarks, if merely incidental and incoherent, raise the educative value of a subject to any appreciable

degree. What is needed are fixed and clear-cut principles that are part and parcel of a complete system of philosophy; and these must be presented as such and not as the outcome of haphazard reflection.[1]

Mathematics, the school of exact thinking, is consequently the preparatory school for scientific logic. Though it is unequalled for the obtaining of rational perceptions that lie within its own domain, still its scope is confined to this domain, the field of quantities. Once this limitation is understood, mathematics will serve as a guide to the general domain of rational perception.

A deep interest in speculation may, admittedly, be enkindled even in early life by mathematics; but the test of the elastic force of this interest is after all the progress from the understanding of the relations of quantity to the understanding of the fundamental relations of things. Natural science also awakens a strong speculative interest; but it, too, must be supplemented in this by philosophical instruction. Allow philosophy its proper place in the curriculum, and the natural science instruction will be less prone to treat its materials too extensively, as is frequently done to the loss of much of the educative content of this subject. Philosophy joins the physical and ethical elements of the course of study and may thus be instrumental in uniting the sciences and the classics, the *realia* and the humanities, whose antagonism is the greatest menace to the unity of our higher education.

The theological element of instruction must also be supplemented by the philosophical, for the two subjects are intimately connected. Theology grew strong first by opposing philosophy and then by allaying itself with its former enemy, and now theology and philosophy are joined in a friendly union in the works of Christian thinkers: dogmatics has adopted many definitions of metaphysics, and moral theology has enriched itself with the spoils of ancient ethics and has in turn supplied the basis for a deeper philosophical ethics. No apology of Christianity, be it for controversial or confirmatory purposes can neglect the teachings of philosophy.

4. Thus the relation between philosophy and the sciences and the educative process is so intimate and many-sided that

[1] Herbart calls the system of philosophy the keystone of instruction: "To completely teach how life is determined by its two rulers, Speculation and Taste, we must search for a system of philosophy, the keystone of instruction." (*The Science of Education*, Transl. by Henry M. and Emmie Felkin, London, 1892, p. 195.)

we may justly cherish the hope that educators may soon recognize the importance of philosophy. The philosophical instruction of to-day is only a field for conducting experiments; may it soon be reconverted into a fruit-bearing orchard. Our schools have lost the traditions of philosophical instruction since the thinkers have turned their backs upon Aristotle. However, with the revival of the historical study of philosophy the prejudices against Aristotle are beginning to disappear, and so men are better prepared to appreciate the educational value of the Stagirite. Trendelenburg performed a real service to education when he brought out, in 1836, the elements of Aristotle's logic. Though his edition was, because of its cumbrous form, ill adapted to school use, still it blazed a way which it were wise to follow. The field opened up by this work is not foreign to our schools: Aristotle, no mean product of antiquity, is, like the masters of language, anything but antiquated, and is even more vigorous than they are. Logic, wherever taught, is based on Aristotle, even if his name be not mentioned throughout the entire course. If the teacher of psychology would teach what has been treated from time immemorial as the science of the soul, and if he would familiarize the pupil with the terminology of this science, he must go back to the ancients, especially to Aristotle. Cicero's philosophical works are unintelligible except in the light of the Peripatetic Ethics, and to interpret Horace's *Ars Poetica* and Lessing's *Dramaturgy* you must turn to Aristotle's *Poetics*. Otherwise these are mere *disjecta membra*, whereas the whole may be made accessible through the proper procedure.[1]

However, this whole is here not to be taken as comprising the system of Aristotelian philosophy, for to introduce this into the schools would offer practically insurmountable difficulties. There are passages in Aristotle's works that are so obscure as to be beyond even advanced students. But as thought-materials, and not the system, are the desiderata, one may select such passages as are remarkable alike for clearness and richness of

[1] "Do not suppose, that in thus appealing to the ancients, I am throwing back the world two thousand years, and fettering philosophy with the reasonings of paganism. While the world lasts, will Aristotle's doctrine on these matters last, for he is the oracle of nature and of truth. While we are men, we can not help, to a great extent, being Aristotelians, for the great master does but analyze the thoughts feelings, views, and opinions of human kind. He has told us the meaning of our own words and ideas, before we were born. In many subject-matters, to think correctly, is to think like Aristotle, and we are his disciples whether we will or no, though we may not know it." (Newman, *Idea of a University*, London, 1902, pp. 109-110.)

thought—and of these there is no dearth in Aristotle—and thus the students may be supplied at first hand with a rich thought content.

One special difficulty which has much retarded the development of philosophico-propædeutic instruction was this dilemma: the philosophical instruction was to serve as a guide amid the conflicting systems and yet hold itself aloof from the conflict; it was to be impartial, but withal not colorless and inefficient. Now, the doctrine of Aristotle is so far removed from the strife of our day as to preclude the possibility of being embroiled in the wranglings of the hour. But the standpoint of Aristotle is nevertheless clearly defined, his method of reasoning is well adapted to train habits of correct thinking, his teachings support the moral and religious world-view and are diametrically opposed to naturalism—hence he is specially qualified to be a guide in the world to-day.

Furthermore, if the philosophical instruction of the school is to be a propædeutic course, *i.e.*, preparatory to the specialized study of philosophy, the elements of the Aristotelian philosophy would likewise seem to be the ideal subject-matter. These elements offer the best starting point for the study of the history of philosophy: they lead directly to the whole of the Aristotelian system, which they prelude, thence to the precursors of that system, primarily Plato, as well as to its followers through the long line of Christian Peripatetics. This course will reveal the long and unbroken line of representatives of a great philosophy, which, taking its rise in Attica, continued to find adherents adown the ages of Christianity. The followers of this system, the exponents of a theistic and idealistic world-view, represent a continuous chain of thinkers. They are certainly the longest line of thinkers known in the history of philosophy to agree on the fundamentals; thus they offer the best basis for the orientation in the history of philosophy and, thereby, for the orientation in philosophy itself.

CHAPTER XXV

Theology

1. If the philological element, especially the classical studies, represent the æsthetical aims of education, and if mathematics and philosophy connect education with the sciences, then theology, though it does not lack æsthetical and scientific value, represents directly the moral and religious aims.

The religious instruction serves in the first place to raise to a higher plane the elementary school by furnishing it with an ideal centre and thus preventing it from serving the material interests exclusively. Catechism and Bible History must exert their influence over a larger field than the ancient classics, and more is expected of them than of the Greek and Roman classics. Yet, in spite of their small compass, they contain educative elements enough to be fully equal to the attainment of their high end.

The catechism comprises in the smallest compass the doctrines of Faith and the moral precepts of Christianity, and is thus an amplification of the Creed and the Decalogue. Its method of questions and answers is of ancient origin, having been employed by the Pythagoreans and the nations of the East. But the positive and fixed character of its content distinguishes it from all similar non-Christian texts. With the heathen a catechism was an impossibility, because their mythology, being inseparable from the poetical element, would not admit of plain and simple presentation. Neither could the Deistic theology of the Enlightenment, which had exchanged soulless forms for Faith, be expressed in the precise and exact terms of the catechism.

The catechism is spread all over the world; it is small in size, and low in price; it is the book preëminently of the child. But because of these circumstances men generally associate it—though it contains the sublimest truths and the most wonderful teaching—with what is trite and common. "Few men prize this little book," writes Bishop Giraud of Rodez, in a pastoral letter, "and the world does not realize that its few pages contain the wisdom of the Lord, the wisdom of the Church, and the wisdom of the ages. Imagine this little book to have fallen into the hands of Socrates, Plato, or Aristotle. They would have been filled with awe and wonder and an indescribable joy at having their longing for knowledge so fully satisfied. Yes, they would have been happy, for this sudden light which had thus appeared to them is the teaching that solves our riddles, dispels our anxious doubts, removes our difficulties, and establishes a wonderful union between earth and heaven, between time and eternity, between man and God. And all these results are accomplished by a few words, without any lengthy disquisition; and all truths are stated in such clear and transparent language that naught is needed for understanding them but the ears to listen and the heart to believe and love."

2. Catechism teaches religion synthetically, but Bible History adopts the genetic form. It is the prototype of a genetic course of study, and was on this account highly valued in the early Church. In his work *On Catechizing the Uninstructed*, St. Augustine lays down the rule that the content of the Christian Faith be developed in connection with the historical account given in the Bible, from Genesis to the Acts of the Apostles; and insists that special care be given to the internal connection of the events, all being related to the final end, the love of God. "The thread of the narrative must, however, not be lost; the presentment is to be but the gold setting of precious stones." Conscious of the sublimity of the Scriptural narrative, the teacher will strive to become "little with the little ones." The teacher of religion will never tire of repeating the old, just as a beautiful landscape, with which we are long familiar, is to us a new joy as often as we point it out to such as have not yet seen it.

The simplicity of the Sacred History is the secret of its appeal to the child's mind, but it is withal so profound as to prove even for the mature and highly gifted an inexhaustible source of pious meditation. It presents human life and the deeds of the Lord that have illumined man's earthly pilgrimage. It has not only the movement and the vivid coloring of the epic but also the seriousness and the deep wisdom of didactic poetry. But while profane literature deals with the things of the senses and presents but a passing show, the Bible leads us to recognize what is of the spirit and of truth. Though the ancient poets have told of the beginning of the world and the four ages, yet what is their poetry in comparison with the account in Genesis! What are their odes in comparison with the Psalms, and their tragedies in comparison with the history of Christ's Passion! For the child's awakening moral sense, Bible History furnishes types of good and evil, of right and wrong—types as clear-cut and distinct as the concepts of moral philosophy and withal concrete, tangible figures, intelligible human types. To Scripture we may apply the words of Moses, "Consider that I have set before thee this day life and good, and on the other hand death and evil."[1]

Bible history is thus food for the heart, but stimulates no less the imagination. The Bible will continue to the end of time to inspire the sculptor and the painter; it abounds in dramatic situations and noble, whole-souled characters. The solemn

[1] Deut. XXX, 15.

style of the East—particularly in the modified form employed by the Hebrews—as embodied in language, manners, and actions, appeals strongly to every receptive mind. The sacred heroes move in a scene alike charming and suited to the action and characters: the terebinths wave their crowns above the tents of Abraham; the eye of Moses sweeps across the broad expanse of land even to the distant sea; and Christ points to the birds of the air and the lilies of the field.

The Bible is the cradle of the historiography of the Christian nations: the national histories became world-history by being joined to the Scripture history.[1] The Bible still retains a similar value for the understanding of history and for the development of the historical sense. It kindles an interest in the past, and directs us to look up to that which is truly great and lasting. It leads the imagination beyond the present and the here, gives us a glimpse of eternity, and teaches us to measure all by it, the highest of all standards.

3. In former times there was besides the elementary religious instruction no other course of Christian Doctrine than that which prepared either directly or indirectly for the professional study of theology. But in recent times a form of religious instruction has been developed which, while employing scientific methods, is still not professional in tendency and, consequently, answers the purpose of a cultural course in theology. It is similar in scope to the popular theological literature of modern times, for its object is to instruct as well as to edify. After the other sciences, particularly philology and history, had been allowed more scope in purely cultural courses of study, it was imperative that theology should also, in order to preserve the balance, extend its field of usefulness. As soon as antiquity and nationality were recognized to be historical elements that are still vital influences in modern life, Christianity had to assert its even juster claims to the same distinction.[2]

Christianity is closely connected with antiquity as well as with the modern nations: by its beginnings it belongs to antiquity, and it is bound up in what is best and deepest in the modern nations. The history of the transition from antiquity to the Middle Ages moved upon Christianity as upon a pivot. Christianity was the soul of the Middle Ages and the controlling factor in the movements that initiated modern history; and by

[1] Cf. Vol. I, p. 180.
[2] Cf. Vol. I, p. 331.

present-day leaders it is regarded either as the mainstay of society or as the chief reactionary force. The characters of classical antiquity are justly celebrated for their greatness and typical intelligibility, but the Christian characters are no less sublime and vastly superior by their unselfishness. The public spirit of the heroes of Faith is superior in motives and aims to that of the patriots of Greece and Rome. The stars of the heroes of antiquity appear isolated or, at most, in clusters, but do not revolve around a central sun, as do the stars of those Christian heroes whose memory is preserved by the Church.

Historical science has in its whole field no greater subject than the Christian Church. Compared with her, the oldest governments are of yesterday. She has witnessed revolutions and onslaughts that threatend her very existence; but they did no more than destroy, perhaps, a few outworks. She is the ancient Church, but not antiquated; she is the Church of the ages, but young with the vigor of eternal youth; and she has within her the God-given forces that will continue to renew her strength while the centuries roll by. Her influence is felt in all fields of human endeavor and enterprise; her teaching is raised to the rank of a science; and her forms of worship represent some of the noblest efforts of the arts. Her long and glorious history has been embodied in forms and practices that have remained with her as she passed down the ages. There are but few, if any, Christian antiquities that are not living on in some form in the worship or in the customs of Christian communities. There is not any period of history, nor any Christian nation that has not made some contribution to her art and worship. The voices of the nations and of the ages join in the liturgy of the Church, and thus represent the devotions of people and of generations.

The exposition of these phenomena and relationships—or more definitely—the analysis and presentation of the structure and function of the body of the Church constitute the educative value of Church History. But to be satisfied with this element would be tantamount to viewing the outside of the Church without entering into a study of the informing principle of her body. We can not understand the beginning and activity of even the State without taking into consideration an ideal factor: political principles and traditions, national traditions, evaluations of many kinds, *i.e.*, an intellectual content, though this need not necessarily be formulated to wield great power over the minds of men. How much more true must this be of the

Church, who takes her beginning from a spiritual content and whose mission it is to preserve and transmit this content! Faith and commandment, dogma and moral law, are the vital principles that must be our viewpoint in estimating the development of the life of the Church. Catechism imparts directly a knowledge of dogma and the moral law. But the higher course in Christian Doctrine must go over the same ground, with this difference, however, that it should demonstrate how the "words of eternal life" are embodied in national life and history.

4. The position of theology among the sciences offers a further reason why a popular course of theology must be introduced into the course of general education. Theology is based neither on experience nor on speculation, but on authority. It is to be expected that an age which is remarkable for intellectual restlessness and scientific experimenting, will regard a science of authority as opposed to real research. Speculation will attempt to supersede it and will undertake to deduce dialectically the content of revelation, whereupon the latter will necessarily evaporate. Man, now feeling himself unfettered, will be given to the boldest speculations, and these will grow the more subjective the more the distance grows between the mind and the truths of revelation. Experience will then be called in to restore a content for the play of the fancy: empiricism will soon lord it over metaphysics and bring upon it the same contempt which metaphysics brought upon theology; metaphysics will be scorned as but an appendix of theology, and both will be voted things of the past and the creations of madbrains. Nature alone will be recognized as an object of science. The ideal world, which appeared to the thinkers of former ages to be the basis of the sensuous world and the key to its understanding, will be ridiculed as being a castle in the air. Abandon the supernatural, and the supersensuous, both in theory and practice, will be untenable. The sensuous perception will require as its practical complement the sensitive appetite; eogism and the struggle for existence will be expected to explain the moral world: to this pitiable plight must the world-view be ultimately reduced.

And actually men have succumbed to the very fate which they were striving with might and main to escape: naturalism must, if sincere, likewise establish an authority and must, by internal necessity, establish itself as a dogma. Thus the sense of truth, in whose name the original harmony was destroyed, will lead men back to the true. The surrendering of the super-

sensuous principles will be recognized as a surrendering of the whole truth. Those principles, however, are not merely dialectical; the Archimedean point of speculation can not be found in speculation itself, much less in the field of experience, for it exists only in the supersensuous field opened up by Faith. Experience, speculation, and revelation must remain connected, if the mind would at all enjoy the boon of knowledge, which is itself but a part of a world of higher things. The science of authority and of revelation is a corner stone in the structure of the sciences. It must, therefore, occupy a place in every course of study that aims to prepare the student for the pursuit of the sciences. The youth would miss a valuable element of general education, if he were to be denied an acquaintance with a science that represents, by its content and methods, a form of research of such unique importance.[1]

Theology is like the stone pillars in our observatories, which, resting on bedrock, extend up into the building and thus assure the instruments a firm support that is free from the vibrations to which the rest of the structure is subject. That such pillars be erected, is necessary for the full development of the mind, and, in this respect, it matters not whether they be used for obtaining a broader and clearer outlook, or whether they remain standing without being used or even understood.

The cultural course of theology must include, not only the historical and the dogmatic and moral elements, but also the liturgical. Piety appears as a creative force in the various forms of public and private worship: stones, colors, movements, sounds, language—all must assist to give expression to piety and devotion. The subject-matter of the science of theology is here made the object of the arts, and, though appearing under different shapes and forms, it ever remains the same. To bring out this harmony and unity in the various forms of expression, is the function of liturgies, which is supplemented by symbolics, *i.e.*, the study of the symbols of religion. These two sciences connect theology with poetry and the arts.

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[1] Cf. Newman, *Idea of a University*, pp. 19-98.

IV

THE ACCESSORY ELEMENTS OF EDUCATION

CHAPTER XXVI

History

1. If the course of general education admitted only the basic subjects, the pupil would still acquire a considerable amount of historical knowledge. Some of the Greek and Roman historians are read in the classical course, and the poets and orators read also contain historical materials. The same may be said of the classics of modern literatures, and a suitable selection from the national literature might almost take the place of national history. Furthermore, the history of literature treats in chronological order such subjects as are often closely connected with general history, while Bible history and Church history are the historical disciplines of the religious instruction. But these branches are not the only ones that embody historical materials, for all our educational instruments have a historical character, and it will require but little effort on the part of the teacher to bring out their historical content. The instruction in history should correlate these historical materials, and if it did so, there would be more unity in our curricula. The primary function of the instruction in history—considered in reference to the whole curriculum—is to order, to elaborate, to supplement the historical elements embodied in the course of study.

But history has, besides, its own educative value. It acquaints us with the deeds and the events of the past, and thus widens the mental horizon. It describes human actions, relations, types, and characters, and thereby imparts a knowledge of men and of life and awakens an interest which, in many cases, grows to sympathy and partly to devotion. If properly coordinated with the other educational instruments, it may lead to the state of mind described in Terence's line "*Homo sum, humani nihil a me alienum puto.*" Poetry is, indeed, in one respect, more effective than history; and Aristotle contended that it is more serious and more philosophical than history, because it

presents the universal, while history is restricted to the concrete.[1] But the reality has the advantage in being connected with our weal and woe; it appeals to us with the force of an *argumentum ad hominem*. Pliny says, "Unless an oration or a poem is perfect in form, it will not be appreciated; but a historical narrative will appeal to us, irrespective of its style."[2]

2. History presents to our view all that is great—great struggles, great sacrifices, great sentiments—and is apt to arouse kindred emotions in us. When the Germanic peoples banded together, in 1813, to throw off the tyrant's yoke, they found inspiration in the accounts of the heroic defence of the Swiss as well as of the ancient Greeks. Friedrich Lange's translation of Herodotus was an important contribution to the patriotic literature of the period. It is significant that Plutarch's *Lives* were the inspiration of the boyhood of so many great men. To attain effects like these, history must combine with the art of language, and the historical narrative must be written, not in a poetical, but in a classical, style. "Periods which no master has described, whose spirit no poet breathes, are of little value to education."[3] The sources of history have more of this educative value than the works based on them, since the latter can not approach the former in freshness and originality.

This moral side of historical study has been stressed by many ancient historians. But their leader, Herodotus, the Father of History, has gone farther in recognizing also its religious side. His reflections resemble the choruses of the ancient tragedy, for these sing of the frailty of man, of the just dealings of the deity, and of the punishment of pride. There are catastrophes in history, which spontaneously call forth such reflections, even if the historian does not see in the happenings an intervention of the divinity that shapes our ends, but recognizes only the fulfillment of the laws that govern all events, for even these laws lead ultimately beyond the sensuous. Still, such reflections can be properly appreciated only by the mature mind, and none but the most mature should attempt to write philosophical history. "We can not seriously consider the events of human life," says Novalis, "without being filled with a deep and indescribable joy, and this emotion will make us patient of earthly

[1] Aristotle, *Poet.*, 9.

[2] Pliny, *Ep.*, V, 8.

[3] Herbart, *Æsthetic Revelation of the World*, in *Science of Education and Æsthetic Revelation of the World*, Transl. by Felkin, London, 1892, p. 74.

ills. Young people read history for entertainment, to satisfy their curiosity. But to the mature man history is a kindly friend, who, with gentle voice, directs his gaze upwards to that higher world in whose light all the pomp and circumstance of this gay world assume a new shape. The Church is the home of history, and the heavens above are its flower-garden. Only God-fearing men, who are so far advanced in years as to have buried their hopes for this world and whose sole desire is to be transplanted to the flower-garden above, should write of history. Their narrative will not be gloomy or morose, for the light from the heavens above will illumine it and show everything in its true proportions and true colors, and a holy spirit will hover over these waters."[1]

3. The ancients praised the study of history as a good preparation for the management of public affairs. In this connection, Cicero calls history the teacher of life, and Diodorus maintains that it gives the young the understanding of the old. Of modern writers, Dryden agrees with the ancients: "They who have employed the study of history, as they ought, for their instruction, for the regulation of their private manners, and the management of public affairs, must agree with me that it is the most pleasant school of wisdom. It is a familiarity with past ages, and an acquaintance with all the heroes of them; it is, if you will pardon the similitude, a prospective glass, carrying your soul to a vast distance, and taking in the farthest objects of antiquity. It informs the understanding by the memory; it helps us to judge of what will happen by showing us the like revolution of former times. For, mankind being the same in all ages, agitated by the same passions, and moved to action by the same interests, nothing can come to pass but some precedent of the like nature has already been produced; so that, having the causes before our eyes, we can not easily be deceived in the effects, if we have judgment enough but to draw the parallel." No further proof is needed of the special usefulness of history for the statesman. If education is at all effective in controlling the passions, it will undoubtedly prove effective in dampening the ardor of the political passions. A knowledge of past events, added to the habit of reflecting, will be a great aid in getting the political passions under control.

Here we see that the study of history enlightens the mind.[2] History shows that all human things are conditioned; it shows

[1] *Schriften*, 1805, I, p. 147.

[2] Cf. Vol. I, Introduction, III, 3 ff.

the way by which the human race reached its present standing, and thereby teaches us to understand the present as a development and to look back upon the past with due reference to the evolution of our present condition; hence it teaches us to follow up the threads, which, be they long or short, connect our doings with the generations of the past. With the addition of moral considerations, this historical interest will develop, on the one hand, into a feeling of reverence for the past and, on the other hand, into the consciousness of duty towards the generations to come. Men will begin to recognize the spiritual treasures of the race as the fruits of historical development, and thus the moral consciousness is trained in a very important direction, though in a different way than by the study of great deeds and great characters. The historical sense is itself a boon of priceless value; there have been entire periods that lacked this sense, and to us their world-view, untaught of history, appears strange and repulsive.[1] Historical studies can not create this historical sense, which depends on larger forces and is connected, one might say, with the social consciousness; but, once it is acquired, it can be conserved and spread by the study of history.

The enlightening study of history is pragmatic, but not politico-pragmatic in the sense of the ancients, for it must embrace all phases of civilized life. The comparative study of history, which is likewise a product of the modern world, must also embrace all phases of civilization. This comparative study of history verifies, in a certain respect, the statement of the ancients that history is "the mother-city of philosophy."[2] For the comparative study of the historical phenomena searches after all analogous features and then proceeds to lay down general rules; it provides sufficient material for drawing conclusions, and warns the student to examine all obtainable facts before committing himself to an opinion.

4. Far be it from us to belittle the charm and value of the findings of the history of civilization. Still, we shall not, as is done at times, overestimate the history of civilization at the expense of political history. The latter is charged with containing but variations of the one theme, "Arma virumque cano," *i.e.*, with treating exclusively of war, destruction, and revolution; whereas the history of civilization is said to deal with creative and constructive forces. But the fact remains that wars and

[1] Cf. Vol. I, ch. XXV, 2.

[2] Diodor. I. in. *ἱστορία τῆς φιλοσοφίας μητρόπολις.*

men are the strongest forces in shaping the destinies of nations. That wars play so important a rôle, is to be regretted; but we may not be jealous of the influence exerted by the men. Political history must, consequently, ever form the foundation of all historical studies, and the history of civilization must of necessity follow the outlines drawn by the political development. The data of the history of civilization are too diverse and too incoherent to be used for constructing the framework that the memory needs for holding the historical facts. Deeds and events are easier to understand and to retain in the memory than the details of the history of civilization, just as a narrative is generally more effective than a description. Furthermore, the moral impression of the *res gestæ* is direct, while much extra labor is needed to make the picture of a state of civilization morally effective. Hence the instruction in history must continue its past policy of attaching chief importance to the epic side of this science; it must content itself with inaugurating the enlightening study and with conveying an idea of the comparative study of history.

History is no school science, but is admirably fitted for free and independent educational endeavor. John Stuart Mill says pertinently in his Inaugural Address, that "any educated youth of any mental activity will learn as much of the mere facts of history as is necessary, if he is simply turned loose into a historical library."[1] And there can be no doubt that reading is the main factor in the study of history. Consequently, the history teacher must content himself with training the pupil in the elements of historical study, in the use of chronological charts and other helps, in reading the sources, and in interpreting the works based on these; and he must strive thus to awaken, if possible, an individual interest in one department of history. On this point the historian Dahlmann agrees with us, for he would have the pupil first "construct in his mind a framework of the general course of history," and then take up the study of the sources; and he adds, "I do not, of course, mean all the sources, but I suggest that one or the other important source be read before any modern work on the respective period be taken up: this appears to me to be the real gateway to the garden of history, where one may then pluck the most wholesome fruits. For the study of the Middle Ages, for instance, I should recommend that Eginhard's short biography of Charlemagne be taken

[1] John Stuart Mill, *Dissertations and Discussions*, New York, 1874, Vol. IV, p. 346.

up before Hegewish's or Dippold's modern lives. This method will, I think, teach the pupil the value of both the sources and the modern histories; and the knowledge of the sources will—and this I consider of supreme importance—make him feel at home in some favorite historical field—it hardly matters in which field—and will also prevent the mistake, so harmful in its consequences, of beginning with the universal."[1]

CHAPTER XXVII

Geography

1. There are many points of contact as well as of similarity between geography and history. In the first place, history associates knowledge elements of all kinds from the viewpoint of time, and geography does the same from the viewpoint of place. Again, the map fulfills in geography a function somewhat similar to that of the chronological framework in history—it groups and systematizes. For the answer to the *where*, every science must turn to geography; and to history, for the answer to the *when*. Local fixation can not fail to assist in the understanding of any fact. Geography performs a signal service for political history by showing where the events occurred and by making it possible for us to compile the different numerical data required in this science. The data of the history of civilization likewise are clearer and more easily remembered if associated with a definite place on the map, and the very places often disclose relations unseen before. In natural history, too, the map should be used to show the place where a specimen has been found, or the territory where a plant, or animal, or mineral, occurs.

Geography, furthermore, widens the mental horizon and lends wings to the imagination, for the latter can grasp the idea of the distant much earlier than that of the past. It also shows man in all sorts of conditions and environments, and thereby enkindles a feeling of sympathy. Finally, it alone treats of the life of the unhistoric peoples; but, on the other hand, it supplies also many details for the local background of the life

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[1] J. Janssen, *Zeit- und Lebensbilder*, 1875, p. 341. Similar opinions are advanced by Johann von Müller, *Über die Art und Weise, wie ein Jüngling geschichtlich auszubilden sei*, *Werke*, XXXVI, pp. 54 ff., and by Niebuhr in his celebrated letter on historical studies, *Lebensnachrichten*, II, pp. 200 ff.

of the historic nations, and the pictures of historical sites give life and color to the written account.

Geography, like history, enlightens the mind: it tells us the whence of the products of nature and civilization, and thus shows to what extent our life is conditioned upon the gifts of distant countries and of other peoples. It also offers opportunities for instructive and interesting comparisons—from the comparison of the contours of the earth's surface to the comparative study of the influence of soil and climate upon human life.

What has been said of the relationship between geography and history, applies primarily to physiography, but it applies to it only in so far as it takes into account culture and human life. Political geography, on the other hand, is supplemented by physical and astronomical geography. These two disciplines connect geography with the natural sciences, and it is characteristic of geography that it stands midway between history and nature, the moral and the physical worlds.

On account of this position, the sensuous element is used much more extensively in geography than in history. Sensuous objects are, it is true, important also for the understanding of the past: monuments, places of historical interest, historical curiosities and relics, coins and inscriptions—all these are both instructive and stimulating. Still, to visualize the distant is even more important, because there are more relations between the present and the distant than between the present and the past. The present and the distant are the two focal points of geographical knowledge; and its sources are sense-perception and teaching, observation and exploration.

2. Man is interested first and foremost in his home. But his home is more to him than a mere object of interest and sympathy: all his interests are, and ought to be, intertwined with it, and the home sense is a valuable element of his moral consciousness. "To be in sympathy with one's native place," says Karl Ritter, "is essential to spiritual health."[1] "It is disgraceful," says Pliny the Younger, "to live in one's fatherland and to be unfamiliar with it."

But from the home the natural interest passes immediately to the most distant places; it seizes upon the nearest and then upon the most distant; it follows first the sense-perception and

[1] Cf. his treatise, *Der tellurische Zusammenhang der Natur und Geschichte* in the *Abhandlungen* of the Berlin Academy of Sciences, 1836.

then the imagination. Young and old will never tire of listening to the tales of

> "Antres vast and deserts idle,
> Rough quarries, rocks, and hills whose heads touch heaven,
> And of the cannibals that each other eat."[1]

The Greek boy found in his Homer both the near and the distant: descriptions of his beautiful native country he found in the catalogue of the ships in the *Iliad;* and the indistinct outlines of foreign countries, in the apologues of the *Odyssey*. In Herodotus, too, foreign countries are still wonderlands; yet in his works a more definite relationship may be perceived between Greece and the foreign countries. The practical interest, which considers the value of geographical knowledge for commerce and daily life, suppresses the poetical element of the initial conception, but establishes, instead, the links that connect points which seemed at first to be polar distances apart. This practical interest prepares the way for the pragmatical, which traces the mutual relations between the near and the distant, and which has a speculative character. The knowledge which is acquired under the influence of this interest may be described as *Welt- und Heimatskunde*[2] (general geography and home geography). Here the sensuous element and the didactic element are properly co-ordinated; geographical study is supplemented by geographical observation; geography is considered the art of seeing, and is thus prevented from degenerating into polymathy. The study of the pupil's actual environment makes him capable of understanding the reports about distant countries, and the latter reports recall the many analogous features that he must still observe in his own neighborhood. Our home environment is thus made an object lesson of the whole world. "In the relations of the localities of the home country," says Karl Ritter, "lie the relations of the whole." And Alexander von Humboldt tells us, "Nature is in every corner of the earth a reflection of the whole; the brooklet that is swelled by the heavy rains, is an object lesson of rushing rivers; no well is drilled but you have material for a theory of the earth's crust; and the moss growing on roofs and walls illustrates the beginnings of plant life on the summits of mountains."

This analogy between the small and the great and the con-

[1] Shakespeare, *Othello*, I, 3, 134 ff.

[2] Heinrich Deinhardt is, to my knowledge, the author of this expression, and more attention should be given to his work, *Über Lehrerbildung und Lehrerbildungsanstalten*, Vienna, 1869.

sequent applicability of one's own limited experience to tellurian or even cosmic phenomena constitute the principal charm of physical geography. Physical geography thus arouses both the empirical and the speculative interest, just as it combines materials from both history and the natural sciences.

3. Even more connections are established between different sciences by mathematical or astronomical geography, which, if adequately conceived, covers much ground of astronomy proper. On the one hand, it employs the aid of the natural sciences and mathematics and, on the other hand, extends into the history of civilization and even into theology. The heavenly phenomena are an interesting object of sense-perception, because their changes call for close observation. These changes are partly very limited in extent, and so it is not difficult to arrive at definite conclusions. These conclusions may, moreover, be stated in exact terms and shown in charts, pictures, and other visualizing helps. The heavenly phenomena that are visible in one's home may be compared with those of other places, and this may be done with all the exactness that measuring and computing admit of. The causes of the differences may be noted, and on the ground of them we may test the truth of the reports. The pupil may compute what phenoma must be visible at a definite time at a definite place, and this place may be such as neither the pupil nor any man has ever visited. Astronomical geography thus offers more opportunities than any other subject of the curriculum for showing the wide range of mathematics, for in this subject there is no end to problems dealing with place, time, and motion.

By applying astronomy to the time divisions we obtain the first principles for the science of the calendar, and in this science the interest in geography and astronomy combines with the interest in the history of civilization. The science of the calendar likewise connects—because of the relationship between the division of the year and certain religious feasts—astronomy with religious instruction. Between these two subjects, astronomy and religious instruction, there is, at the same time, an older and closer relationship: "The course which the stars pursue year after year and with a regularity that is truly wonderful and almost incredible, demonstrates that a divine power and a divine mind is here in control; and he who does not perceive this divine power must, indeed, be insensible."[1]

[1] Cicero, *Natura Deorum*, II, 21.

Astronomy is based on mathematics, and in the system of the seven liberal arts it was treated as a part of mathematics, an arrangement that was advantageous to both subjects. Astronomy was thus supplied with its presuppositions, and mathematics was crowned with an imposing capstone. However, if taught in connection with geography, astronomy should not be narrowed down to a treatise on the globe, nor should it serve merely as an introduction to physiography. Astronomical geography is, on the contrary, more important and more educative than any other department of geography, and so it may rightly claim to be basic, and not accessory.

But, regarded as a whole, geography is only accessory, and that for the same reason as history—the school can not do justice to the wealth of its content. A geographical knowledge that is worth mentioning can not be acquired without a geographical library and extensive travelling. The teacher of geography must, therefore, content himself with training his pupils in the elements and in the use of geographical helps.

In the whole of the educative process geography, being placed midway between the historical and the natural sciences, must fulfill the important function of connecting these two fields. But it can not do this until it has itself attained unity. The genius of Karl Ritter built the foundation for this unity.[1] But his school is not acting in full accord with the ideas of the master, and is giving undue attention to the natural sciences. However, the teleogical principle of Ritter, *viz.*, the conception of the earth as the home of the race and as constructed according to a plan which geography when isolated can not explain—is essential since it alone can give unity and a permanent foundation to the science of geography, because it alone incorporates it into an ideal world-view.

CHAPTER XXVIII

The Natural Sciences

1. In accord with the general belief of his age, Aristotle regarded the heavenly bodies as divine and imperishable, and in a memorable passage, in his *Parts of Animals*, he contrasts them with plants and animals, "to which," as he says, "we are

[1] Cf. Vol. I, ch. XXIX, 3.

bound by the ties of a common life."[1] "Both kinds of beings," he continues, "command our interest. It is true, we can perceive but little of the heavenly bodies, but their very sublimity renders the scant knowledge we have of them more valuable than the knowledge of the world about us, just as it pleases us more to observe the least thing belonging to a person dear to us than to view objects, perhaps more important, but foreign to our interests. But, on the other hand, the study of plants and animals has this advantage that we can acquire a more comprehensive knowledge of these objects, and as the latter are closer to us and more akin to our nature, the study of them may be compared, in a measure, to the study of the heavenly bodies.... The intelligent man, and he who is able to trace things to their last causes, will find unutterable delight in studying the works of nature, even in the case of such things as are not pleasant to the senses. We all enjoy the works of painters and sculptors representing and imitating these things, and it were certainly foolish and inconsistent to neglect the opportunity of viewing the plants and the animals in nature, where we can trace their causes. We should not let a childish squeamishness keep us back from examining the lower animals, because all natural beings contain something marvelous. We may say of them what Herakleitos remarked to the strangers, who hesitated to enter where he was warming himself by the fire: they should not be afraid to approach, because the gods were also there. We may, similarly, not exclude any part of a being from our examination, for nature and beauty are found everywhere; nature, in that all is adapted to its end and nothing is left to mere chance, and beauty, which is the end of existence and of development."

Aristotle thus shows that the spontaneous interest seizes upon two different fields in nature: the cosmic phenomena on the one hand, and the natural beings belonging to our environment on the other. At the same time the philosopher gives the chief reason for the educational value of natural history. His words about the minute forms of life around us voice the sentiments of a friend of nature. The friend of nature has, indeed, an empirical interest in the variety of living creatures as well as a speculative interest, which inquires into the conditions and causes of life. But he is no less alive to the æsthetical interest, which, on the one hand, observes and studies the beauty of forms and, on the other, sympathetically enters into

[1] *De part. anim.*, I, 5.

the life of nature. Finally, he is not at all deaf to the religious teachings of nature, but

> "Finds tongues in trees, books in the running brooks,
> Sermons in stones, and good in everything."[1]

In fact, all creatures lead him to the Creator.

But the study of nature has many other happy results. For instance, communion with nature deepens the knowledge of one's home, strengthens the home sense, and consequently fosters the sympathetic feelings included in the latter. Furthermore, the quiet reign of law in nature calms the heart when about to cry out with the bitterness of life's struggles. Finally, the mind that is weary of intellectual labors is refreshed by the observation of life in nature: to preserve health of mind, one must use his eyes, ears, and other senses; one must assimilate colors and forms, instead of letters and numbers; must return occasionally from the past—to which our books and studies generally transport us—to the sensuous present.

2. The same holds for the young; and Raumer well said, "The elements of nature study are well adapted to the boy, for he will feel, particularly if much occupied with language study, a natural and wholesome impulse to enjoy himself and refresh his mind by looking at crystals and flowers."[2] But the boy will not be satisfied with merely looking at these objects; he will soon proceed to observe, to compare, and to generalize. The classification of individual specimens affords the valuable logical exercise contained in passing from the specific to the generic, and the inverse of this exercise is obtained by letting the pupil find specimens of a certain family or genus. Natural history thus affords in concrete things the same logical exercises that the language studies require in abstract matters.[3] There are even positive gains in greater linguistic skill. Aside from the obvious facts that the terminology implies an increase in the stock of words and that the work of describing the specimens affords a training in expression, the value of designating and, therefore, of language in general is seen from a new angle: "One name designates an untold number of individual things, and in a few pages the naturalist can express briefly and accurately the results of the researches of many years; and precisely because one has first perceived the gravitation of the material world,

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[1] *As You Like It*, II, I, 15-16.
[2] Karl von Raumer, *Geschichte der Pädagogik*, III, p. 331.
[3] Cf. *supra*, ch. XVII, 3

will one realize the more keenly the magical power of the spiritual in language."[1]

The systems of natural history embody no mean amount of such intellectual work, as offers good material for training the young mind. Yet there are methods of teaching this subject that deprive natural history of all its educational value: the terminology is crammed down the throats of the pupils, and they are forced to believe that the system is the only justifiable unit in nature study, while such units as are suggested by life itself are ignored. However, it is just these units that are valuable for instruction, and this is true as well of those that are founded on the practical needs of life as of those that are based on the conditions obtaining in nature, where the different creatures and beings depend upon one another. By following up human aims and relations we shall connect natural history with the humanistic disciplines, and by tracing the life-units (*Lebenseinheiten*) in nature we shall elicit real sympathy with the life of nature and discover internal unity in what seemed to be wholly unconnected.[2]

3. Natural bodies, the cosmic as well as those of our environment, are directly accessible to the student. But to get at the forces of nature and their substrata, the elements, there is required that deeper study of the phenomena which is the province of the natural sciences proper. Physics and chemistry—no other natural sciences need be considered here—were originally studied by the scientific research worker only, and chemistry was for a long time considered a black art. Now, however, they are essential to the course of general education, for physics and chemistry and the sciences based on them, especially technology, have enriched our modern life with many conveniences, comforts, helps, apparatuses, etc., which the educated man should not use without understanding, since he ought to recognize them as products of specific mental activities. A further argument in favor of physics and chemistry may be drawn from the fact, that the schools must furnish the preparatory training for many technical professions in which at least an elementary knowledge of these two sciences is required.

Of the natural sciences we may repeat what was said above of geography: sense-perception and teaching, one's own experience and the instruction of others—all these factors must co-operate.

[1] Raumer, l.c., p. 333.
[2] Cf. *infra*, ch. XLII.

By reflecting upon what was close at hand—the phenomenon or the object might have appeared insignificant—men have often been led to very important discoveries. The hammers of a smithy led Pythagoras to the discovery of laws of sound. Galileo discovered a law of mechanics by observing a swinging lamp. The falling of an apple led Newton to discover cosmic laws. The steam issuing from a boiling teakettle led Watt to discover laws of the theory of heat. It is of interest to note how one and the same object may affect different men. The man with a geographical interest will ask whence the articles of his environment have come; the man with a bent for the history of civilization will inquire how long these articles have been in use; the natural philosopher, finally, will examine what they are made of and how they were made. The last mentioned will, therefore, be busy with them for the longest time, and will study them more thoroughly than the others did; he will first survey them from all sides, then examine them with his hands, take them apart, and ultimately set about making experiments with them. The experiment, aptly described as a question put to nature, is characteristic of the natural sciences. The guiding element of the experiment has an *a priori* character: the mind must first conceive the idea of procuring the object that is to be observed, and the sense-proportion and observation are only the second step. This joining of logical processes is peculiar to this field of knowledge.

In physics and chemistry it is the method that embodies, like the system in natural history, most intellectual work, and modern physical research has perfected not only the general methods, but has really accomplished great things in discovering and improving special methods, so that, as an educational instrument, physical research can now be compared to mathematics. In as far as the natural sciences employ the services of mathematics they merit the high praise that we accorded to astronomy: they demonstrate the wide scope of the science of quantity and thereby show how the phenomena are controlled by laws.

4. This many-sided educational value of the natural sciences can not, however, be fully utilized in the schools, for they can accomplish even less in this department than in history and geography. To be well up in the books on geography and history, may be considered satisfactory in regard to these subjects. But in the case of the natural sciences the student must live himself into the respective disciplines. A familiarity, for instance,

with botany is impossible without a garden and conservatory; and to study zoölogy properly, you need a zoölogical garden, an aquarium, and an aviary. Again, to study mineralogy and chemistry, more is needed than a collection of minerals and a few pieces of apparatus. These sciences can be treated adequately only in the apothecary's shop, in the laboratory, and the factory. In physics, likewise, the demonstration of an experiment means little; only the pupil's co-operation and his making of the experiment will introduce him into the subject. The mastery of these sciences means technical skill, and the teacher of them should be a master, and the schoolroom should, for any adequate treatment, be turned into a workshop. But such methods of instruction would transcend the scope of a purely cultural course.

It is difficult to correlate even those materials of the natural sciences that fall within the scope of general education with the older and more important subjects. The students generally regard the natural sciences as forming with mathematics a group of studies that has no relation whatever to any other school subject. The ignoring of the bonds that in reality connect the natural with the moral sciences, is responsible for this erroneous conception. Still, even the recognition of these bonds can bring about only an interweaving of the two courses, instead of a fusion, which precisely is the desideratum. The cause of this difficulty is to be sought not only in the content, but rather in the guiding principles of the two sets of subjects.

The innermost nerve connecting the moral and the natural sciences is the concept of their end. Though we may not say that modern physical research has cut this nerve in twain, yet it has much neglected it and has thus impaired the usefulness of the teleological concept as a guiding principle. According to the older conception, which was based on ancient idealism, the end was a metaphysical principle. The good was regarded as the final cause, not only of our striving, but of all happenings; the idea was considered as prior to the corporeal world, reason as prior to nature, the perfect as prior to the imperfect, and liberty as prior to necessity. Francis Bacon attacked this position with the specious argument that the final causes are like the Vestals consecrated to the deity, who are, indeed, venerable, but withal barren. The majority of modern naturalists have accepted his views, and have substituted the mechanistic conception of nature for the older organic view. This change has, it is true, produced some good results in individual cases, yet

it has isolated the natural sciences from the moral disciplines and has estranged the former from the idealistic methods of study. The naturalists have thus bartered the whole truth in exchange for half the truth, and this was too high a price, even if the partial truth be ever so fertile and (as in the present case) practically useful. To Bacon we may say that the Vestals were, though barren, yet not useless: they watched the sacred fire, and their virtue elevated and hallowed all womankind.

CHAPTER XXIX

Polymathy

1. The branches that we have treated in the preceding pages circumscribe the content of general education, but do not exhaust it. This content, namely, includes knowledge obtained from sources of all sorts—from reading, from life, from the present and the past, from history and nature—and often little attention is given to the branch or science to which the information obtained may belong. More attention was formerly given to this informal kind of education; polymathy was valued primarily as an offset against the exclusive study of languages, but it was also appreciated because of the universal appeal of fullness and variety. Essays and even books were written on the art of reading, on making extracts, and there were models for commonplace books, scrap-books, etc.[1] In the schools of the 17th century polymathy was taught under the name of erudition or encyclopedic instruction.

In comparison with the old education, the instruction in present-day schools is undoubtedly rich and varied enough. There is, in fact, more material than enough. However, the science of education no longer teaches the art of reading and of filing extracts and clippings. Still, amid the deluge of newspapers, magazines, the short-lived literature of the day, and the multitude of encyclopedias, it is the duty of the present-day educator to teach the art of ignoring most of what issues from the press. Yet the dipping into all sorts of books and magazines, the passing, like the butterfly, from one interesting thing to another—all this is so diametrically opposed to true education that the educationist might appear justified in ignoring the whole

[1] Monroe, *Cyclopedia of Education*, s.v. *Commonplace Books*.

subject. Still the practice of omnivorous reading is so general that the educationist can not ignore it; nor should he attempt to do so, especially since the school can assist in converting a bad practice into a source of useful knowledge.

Though concentrated study and systematic reading are superior to polymathic interest and varied reading, still the latter have a peculiar value and are entitled to a place beside and after formal education. The proverb says, "*varietas delectat*," and in intellectual matters variety pleases most men. Over and above the charm of variety is the charm of free movement, which the blunt-witted never enjoy in their studies. Moreover, by taking notes and making extracts the pupil may obtain further gains from his reading. The objects of this undisciplined interest may be called, in contrast with the higher educational values, the consumption goods of intellectual life.

2. But these objects are not necessarily of small value. They may belong to the school sciences, though they are not treated so systematically as they. What has been casually heard or read may prove a valuable addition to one's knowledge. It may throw new light upon a point learned in the schools; or it may prove the starting-point of a new interest; and this will be the case especially if the work of the schools and the spontaneous efforts of the pupils do not pursue different paths. But even such materials as do not belong to any of the recognized school subjects, are on that account not worthless. Brief notes and comments, which denote no more than the passing interest of the moment, may prove the beginnings of great things. Many a poem was occasioned by an item in a newspaper; and many things which an earlier age regarded as rarities and curiosities, were later made the subjects of special sciences. The files of the polyhistorian were the cradle of many a modern science, for instance, the history of civilization, the science of statistics, and geology. And we, too, may be treating as unclassifiable matter and as padding what will eventually be the subject of scientific research.

By consulting works of reference, expecially encyclopedias, we may obtain material for conversation and social intercourse, which fact is expressed in the German term for encyclopedias, *Konversationslexika*. But the many-sided knowledge that may be thus obtained has also a formal value in that it makes for a better command of language. One must possess a certain amount of positive knowledge before one can expect to unearth the treas-

ures contained in language, and only broad knowledge can do justice to the universality of language. Goethe's and Rückert's power of language is conditioned partly upon their wide reading and varied knowledge. But in Jean Paul the wealth of diversified knowledge obtrudes itself at the expense of the form: his style is obscure and crude, though not without a certain charm. However, the opposite fault is more common; the style appears weak and flabby, because the writer lacks the conceptions of things; and a goodly part of language mistakes can be traced to simple ignorance of the things the authors venture to write about.

Language instruction, particularly Latin instruction, furnishes the foundation for the training in style. Favorite books, read and reread, awaken the individual power of language. Extensive reading furnishes a copious supply of words and phrases. Still, it is only a many-sided knowledge that can fit a writer to bring out the content of language.

Because polymathy can not be coördinated with the other branches, is no reason why the schools should ignore this subject. In this regard the old schools had admirable practices, which it were well to revive. Occasionally the teacher should give directions about making extracts and clippings. He should demonstrate good methods of filing. He should instruct his pupils how to use works of reference, how to use any information that they have found or heard, and how to reap the best fruits from their reading. Much useful knowledge may be imparted in this way, and thus the pupils may also be trained to acquire habits that will later serve them well in scientific research work.

V

THE ARTS

CHAPTER XXX

Music

1. Among the arts that constitute the formative (ποιητικός) element of education, music occupies the first place, because it has most relations to the basic materials and can serve directly the higher ends of culture. Ancient pedagogy attended more than the modern to the ethical effects of music. Plato taught that education by music is most important, "because rhythm and harmony enter most deeply into the inner part of the soul and direct it strongly towards all that is noble. The senses are trained to distinguish between what is beautiful and what is not, and are so charmed with the beautiful as to receive it gladly and to assimilate themselves with it, while rejecting the ugly. And all this is accomplished at an age that is unaccessible to the words of the teacher, so that, when the child attains the years of formal schooling, he will be imbued with kindred sympathies, which will much assist him in understanding what is taught."[1]

One reason for this appreciation of the educational value of music lies in the fact that the ancients attached most importance to the song, for the latter is, on account of its connection with poetry, of greater pedagogical value than any other branch of music. The religious hymn, which is an important element of religious worship, strengthens and deepens the effects of religious instruction, and is an instrument for bringing home to the feelings and the understanding the meaning of religious poetry. The feelings that are aroused by the instruction in the mother-tongue as well as in home geography, are best expressed in songs: patriotic songs and melodies foster the ties that connect the pupil with his nationality, his fatherland, and his home. Sung in chorus, the song is the expression of the community spirit and the organ of school life, which it enriches with an ideal element. The song appeals, like language, to all men, and its

[1] Plato, *Rep.*, III, p. 401.

effects are, like those of language, universal. "There is no mood," says St. Augustine, "but the voice and the song can express it, and by a strange relationship they always strike a responsive chord in the human heart."[1]

From this viewpoint vocal music is superior to instrumental, and the latter's primary function is to prelude and accompany the song. The specifically educational advantages of instrumental music lie in another direction. Its technique affords wholesome discipline, and there is probably no other subject of the curriculum that furnishes equal opportunities for exact and painstaking care. The least carelessness produces a false note, and so music punishes on the spot any negligence in execution. This feature of self-control it has in common with mathematics,[2] to which science it is also related internally.

2. For an education in music, Riehl—whom we trust as the safest guide in this matter—recommends two instruments, "the thorough and soulful violin and the encyclopedic piano."[3] The chief factors that recommend the violin are "its severe discipline and the difficulties of its technique, for these turn away all except the gifted." But the real educational value of this noble instrument, which approaches nearest to the timbre of the human voice, lies therein that it allows the performer "to express the tone quality in its purest and most ethereal form." The violin is the instrument of the classical age in music; the lute, of the Rococo period; and the flute, of the Georgian era; while "the encyclopedic, characterless piano is the proper instrument of an age which, because attempting and reproducing everything, lacks creative originality." Yet the piano has this advantage that it can adapt itself to other instruments and can thus reproduce, to some extent, even their ensemble.

The mastering of musical technique is analogous to the mastering of technical grammar. Both have a value of their own in being a *disciplina mentis*. But they have a propædeutic value besides: they prepare the way for the cultivation of one's taste; and a refined taste can be learned in music as well as in philology of the masters only. Riehl says that the graduates in music "should be able to interpret good music and to read musical scores; they should understand the laws of composition and be able to judge their application; they should also be at

[1] *Confess.*, X, 33.
[2] Cf. *supra*, ch. XXIII, 3.
[3] *Über musikalische Erziehung* in the *Kulturstudien*, pp. 333 ff.

home in the styles of different periods and schools, and ever have present before their minds the historical characters of the great masters."

This quotation expresses both the theoretical and the historical element of musical education. Among the ancients as well as in the Middle Ages the theory of music was regarded as one of the seven liberal arts. All that was worth knowing of the subject was thus treated compendiously, and music retained a certain connection with mathematics. Nowadays we have nothing similar. Our elementary teaching of music does not cover ground enough, the thorough-bass covers too much, acoustics treats only one phase of the matter, æsthetics likewise only one, and the two combined do not embrace the whole. What we want is a didactic unit which should be, though scientific, still generally accessible. The ancients rightly placed the theory of music beside astronomy, *i.e.*, the science of sound-motions beside that of cosmic motions. These two sciences offer problems that are of deep interest to the speculative mind. Both show the effects of the spirit-inspired law. The fancy staggers at the wonders revealed by astronomy in the world of space, time, and masses. And neither the fancy nor the heart of man will ever exhaust the possibilities of music in its narrow sphere of the world of sound.

3. The history of music is a valuable supplement to the history of literature and an integral part of the history of civilization. Musical compositions are the creations of master spirits, and songs and music are important elements of the national life. What is beautiful in sound will neither tarnish nor rust with the passing years, and performed in after ages it will conjure up the buried past. The masters of music are the landmarks in the history of music, just as the masters of language are the landmarks in the history of literature; and the great composers are points of orientation and a vitalizing influence for the students of music. Riehl, who grows eloquent on this point, remarks that the history of music knows only a Renaissance but no antiquity, and that the former must, therefore, take the place of the latter. But just as we may call the art of the catacombs antique, so we may also recognize the Gregorian Church Music, which has been restored to the Church, as the antique in music. We are indebted to Guéranger for affording us an opportunity to study at first hand the music of the ancients, for in the churches of the Benedictine Congre-

gation of Beuron we may observe the differences between the Dorian, the Phrygian, and the Mixolydian modes; and thus the music of the early Church and, indirectly, of the ancient Greeks is no longer a mere historical curiosity. It was a surprise to find threads here that connect us with the ancient world; but to follow up these threads is difficult, especially because the Renaissance has, contrary to its policy in other fields, cut them, instead of fastening them anew.[1]

CHAPTER XXXI

Graphics

1. For the purpose of training the ear to appreciate the works of the great composers, it is much better to have the pupils perform music than to let them merely listen to other good performers. And similarly in order to train the eye to appreciate the works of the arts of design, it is better to let the pupils copy and reproduce these masterpieces instead of having them merely look at famous pictures. Realizing this truth, the ancient Greeks introduced graphics into their schools, and tradition has it that the painter Pamphilos of Sikyon inaugurated this practice.[2]

The cultivation of a refined taste is still the chief educational function of drawing, for the latter should serve as the key to the beautiful in form and color, whether in nature or in art. In keeping with this purpose, drawing, on the one hand, vitalizes and ennobles the observation of nature and, on the other hand, it gives the pupil an idea of the conception and the composition of the works of the arts of design. To interpret and to enjoy the works of these arts involves a different mental process than is required for poetry and music. First, being mute, the works of the arts of design do not depend on the reproduction by the subject (the student). Furthermore, they are at rest, and to the eye of the mind as well as of the body they appear ever the same. Thirdly, they stimulate the feelings and evoke the activity of the cognitive faculty; and finally, their objectivity supplements the subjectivity of the creations of those arts that

[1] Cf. Wagner, *Introduction to the Gregorian Melodies*, London, 1911; Benedictines of Stanbrook, *A Grammar of Plainsong*, Worcester, 1905.

[2] Aristotle, *Pol.*, VIII, 3; Pliny, *N.H.*, 35, 11.

deal with words and sounds. Hence, as soon as education inclines towards subjectivity, it has special need of turning to the arts of design for a corrective.

However, buildings, statues, paintings, and all other works of the arts of design are important not only for æsthetics, but also for history. Being products of a certain period, they are documents of that period, and, placed objectively before our eyes, they recall the past most vividly. Thus there is an intimate connection between the history of art and the history of civilization. Furthermore, there is a close connection between the arts and general history: not only that artistic monuments are eloquent records of past deeds and events, but the arts, particularly painting, look upon the representation of memorable occurrences as one of their chief functions. These arts can also be turned to good use in the teaching of religion.[1] Because of this interrelation between the arts and the sciences, elementary drawing, as taught in the schools, must be valued as a preparation for more advanced work, and as offering a good opportunity for studying the mental processes involved in producing the works of the graphic arts. Drawing renders a further service in teaching the pupils the use and value of the educational helps afforded by the arts. During the last years many educationists have dealt with the rôle that art plays in the life of the child, and the article in Loos' *Enzyklopädisches Handbuch der Erziehungskunde* (Vienna, 1906, I, pp. 298–933) gives a good résumé of the efforts made in this direction, besides illustrating the progress made with regard to educational helps.[2]

2. But drawing has a still wider field of usefulness in education and instruction. It should be employed whenever the form of the thing treated means anything; for a thing will be understood much better if the mind is assisted by the hand that makes a drawing of the object to be observed and studied. Drawing is hence required not only for applied mathematics, but also for the instruction in space relations. Rousseau has justly recalled the fact that geometry is also an art of the eye. We should, therefore, have an exact representation of space before we begin to study its relations, and satisfactory results can be attained only by insisting that the pupils construct their geometrical figures with special care. For this reason form study should

[1] Alfred Hoppe, *Das Zeichnen im Dienste des Religionsunterrichtes*. Vorlage für Kreidezeichnungen im erläuternden Texte, 1897.

[2] Cf. *Cyclopedia of Education*, s.v. *Art in the Schools*.

be one of the explicit aims of instruction in drawing;[1] but, to be productive of definite results, it must not confine itself to pure theory, *i.e.*, claim to be a geometry without the geometrical method.

Drawing can train and sharpen the eyes at an early age for the observation of the objects of nature; the types of forms supplied by natural history—crystals, blossoms, diagrams, etc.—offer an opportunity for elementary drawings and for developing a sense of beauty. Map-drawing is an integral part of the instruction in geography, and a valuable aid to the memory. Drawings should be used also in history instruction for visualizing the objects of all sorts that are and have been employed by civilized man. Forms must be reproduced in practically every department of the natural sciences; and these drawings represent the transition to technical drawing, which is employed wherever the objects must be materially changed to meet various human needs.

Even apart from all application, drawing is of great value for formal education. It presupposes, on the one hand, a mental picture, as perfect as possible, of the object to be drawn and, on the other hand, the control of the movements required for representing the object. The success depends on the co-ordination of the parts of the mental picture with the motor sensations; and this necessitates a continuous reproducing in the mind of the mental picture, and a continuous response of the motor sensations to the control and corrections proceeding from this mental picture. But these physical activities can not fail to discipline the flighty mind of the child, and such wholesome discipline is supplementary to that exercised by music.

CHAPTER XXXII

Technology

1. It is readily acknowledged that the fine arts are closely related to cultural education. But the mechanical arts, being concerned with practical needs, might seem to have no bearing whatsoever on it. Still, we can bring them into some relationship with cultural education: *viz.*, by considering manual labor as an offset and supplement to mental labor; and from this

[1] *Cyclopedia of Education*, s. v. *Form Study*.

viewpoint technological skill is supplementary to learning. This viewpoint was foreign to the Greeks, who scorned all manual labor as being beneath the free man and as fit for slaves only. The Romans, however, regarded the pursuit of cultural studies as compatible with the traditional tilling of the soil. Much less could the Christian mind conceive manual lavor to be in any sense degrading, and the rules of early religious Orders prescribed work with the hands for all monks, for the purpose, no doubt, of counterbalancing mental labor. Great scholars of different periods learned and practiced trades. Comenius insists on training the pupil in the more important trades,[1] and illustrates their technique in his *Orbis pictus*. Since Rousseau proclaimed the doctrine that the work of the mind and the work of the hands should prove a mutual recreation to each other, and that agriculture and the mechanical arts should be treated as essential educational instruments, different educationists have stressed the importance of manual and technological training.

One function of manual labor is to meet the just demands of the body and the sensuous faculty. Another is to safeguard the health of the body, since it is liable to suffer from one-sided and intensive mental work. But even mental health is promoted by manual skill. "The workshops," says Karl von Raumer, "are the homes of a mute and practical wisdom, of which many pedants of the schools would never dream. Artists and mechanics practise very much that is of the greatest importance for science, but which, being ignored by savants, finds no place in science..." "If you would learn how to do something, you must not be satisfied with reading about it, or with watching others do it, or with having others tell you how to do it—no, you must do it yourself...." "A thorough knowledge of a thing can be obtained only by thoughtful practice and subsequent reflection; an instinctive art must precede all knowledge...." "It can hardly be estimated how much the savants would be benefited by learning a trade, yes, even by merely being humble enough to decide to learn from artists and mechanics."[2]

There are gains, too, for the formation of a refined taste. There is a "poetry of labor,"[3] and psychologists have done well in making a special study of "labor and rhythm."[4]

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[1] *Did. magna*, 29, 6, XII.

[2] *Geschichte der Pädagogik*, III, pp. 441 and 446.

[3] Cf. Willmann, *Die Poesie der Arbeit* in his collection of essays and lectures *Aus Hörsaal und Schulstube*, Freiburg, 1912, pp. 167 ff.

[4] Karl Bücher, *Arbeit und Rhythmus*, Leipzig, 1899.

Comenius goes so far as to represent the mechanic as the teacher's model. In three chapters, 16–19, of his *Didactica magna* he discusses how the instruction may be made successful, easy, thorough, and that without any loss of time; and here he is continually referring to the example of the gardener, builder, painter, smith, etc. Comenius maintains that the teacher should learn from them how to select and prepare his materials, where to begin, how to make regular progress, how to be patient, how to avoid difficulties, how to waste no time in useless steps and manipulations, etc. Some of these comparisons and directions are very ingenious, and throw light on the inner relationship between manual labor and the educative process.

2. The educational value of a trade lies essentially in the fact that it represents a series, or one may say a system, of movements, operations, manipulations, etc., which are determined partly by the purpose of the work and partly by the kind of material used, and whose proper succession must be patiently and carefully controlled by the learner. Every trade has a more or less compact system of manipulations; it must be grasped in its entirety, and must be learned on its own ground and in its own environment—the factory or workshop. Because of this last circumstance there can be only an external connection between the studies and manual training, and manual labor will follow mental labor without any internal relationship between them.

This deficiency we shall realize still more when we consider that various school subjects encourage manual dexterity by creating a demand for such different objects and instruments as can be constructed only by one possessing general skill. Consequently the pupils should not learn one definite trade, because it alone could not meet these several needs. There is a special need in many cases to construct plastic figures in addition to the representations on a flat surface. Solid geometry, for instance, can not be taught at all from drawings alone, and bodies with three dimensions must be constructed for teaching this subject. Simple apparatuses, made by the pupils, are likewise very helpful in the study of astronomy. Similarly, geographical maps will assume an entirely new meaning, if the pupils can be trained to make their own relief maps. The objects, too, of natural history suggest reproductions other than drawings; and natural science specimens can not be properly preserved without employing technical skill. To demonstrate

the most perfect apparatus in physics or chemistry is less instructive than to have the students themselves construct a simple instrument. Given some knack for handicraft, the teacher and his pupils can construct many practical apparatuses, which, because born directly of the school's needs, will prove the more useful in instruction. Any manual or technical skill acquired is of some educational value, just as there is no element of knowledge but will further mental growth and development. Polytechnics is, like polymathy—if kept within the proper bounds—perfectly legitimate, though it must, even more than polymathy, guard against resembling Homer's Margites, who was a Jack of all trades, but master of none.

3. Thus we note again in this subordinate department the great contrasts of education: on the one hand, concentration and consequent depth in opposition to many-sidedness; and, on the other hand, compactness in opposition to a branching out in different directions.[1]

Various attempts have been made to introduce the mechanical arts into the schools. Domestic science is taught in the girls' schools, but has not yet been correlated with the other subjects. With regard to manual training in elementary schools, a court composed of educationists and political economists must pass sentence upon the results obtained. Pestalozzi's view that the people's school should teach the A B C of the mechanical arts because of their direct usefulness for later life, has largely influenced educationists in recommending manual training for the elementary school. But Froebel was guided by higher considerations when introducing manual exercises into the kindergarten. The Froebelian occupations are, in a measure, well adapted to develop simultaneously the hand and the eye, the sense of form and the taste. But many mediocre elements are here mingled with the good, and the false tendency toward systematizing everything prevents the full application of a good principle, so that much of the kindergarten is, despite the excellent beginnings, nothing else than play. Furthermore, no effort is made to connect the occupations with instruction.

This co-ordination has been considered of chief import by the Herbartians. Herbart values technology, because "it furnishes very important connecting links between the apprehension of the facts of nature and human purposes." He says that "every human being ought to learn how to use his hands; the

[1] Cf. *supra*, ch. IX, 2.

hand has a place of honor beside language in elevating mankind above the brute."[1] The school-workshop, as successfully organized by Ernst Barth, applies the principle of correlation, for it is arranged to serve the needs of the whole course of instruction, though it is obviously more closely connected with drawing and the natural sciences. The technique of the mechanical arts is in this school-workshop the supreme law for all exercises. We may look in this direction for the development of such educational methods as may bring out best the two sides of the educational value of technological training.

CHAPTER XXXIII

Gymnastics

1. Gymnastics strengthens, like technology, the body and thus offsets a one-sided mental activity. Technological training, however, has this advantage over gymnastics that all energy spent on a mechanical art proves real work and produces some tangible object and something directly useful; whereas gymnastics is not related to an object. From this point of view, the anvil and the vise are more educative than the vaulting-horse and the trapeze.

In other regards, however, the gymnastic skill is supplementary to the technological. Gymnastic exercises are more popular with young people than any system of manual training, because they tax their patience less and also require less constant application, and are, therefore, more of a recreation for body and soul. They may also be so adapted to the needs of physical education as to develop the muscles and organs of the entire body - which is beyond the functions of mechanical training— and on account of this feature they have an æsthetical value, which fact prompted the Greeks to introduce calisthenics into the liberal arts course.

The gymnastic exercises must, to exert this ennobling influence on the personality, be properly conducted, and it is well known that athletic exercises, if overdone, are far from being conducive to the development of either strength or physical grace. In European countries, with their large standing armies,

[1] *Outlines of Educational Doctrine*, transl. by A. F. Lange, New York, 1913, p. 260, § 259.

the gymnastic exercises of the schools are regarded as preparatory to the drills of the barracks. But the ancient Greeks teach us to expect of these exercises more than mere physical strength and skill. Plato declared gymnastics to be indispensable in education, because it counterbalances the tendency to search and know—the φιλόσοφον, which may lead to that excessive study which "saps the strength of the body"—and this tendency it counterbalances by developing mettle and personal courage—the Θυμοειδές.[1] The fact that the gymnastic exercises may be made in common, is another point in their favor, for thus they may readily promote an *esprit de corps*. How the gymnasium may be made the home of patriotism, was well shown in the German wars of independence, 1813–1815.

2. Although gymnastics is an old school subject, there are no scholastic traditions with regard to its standing and methods. The attitude of educators toward gymnastics has often changed. At one time they applauded the exaggerated praise which Geronimo Mercuriali lavished, in his book, *De Arte Gymnastica*, upon the gymnastics of the ancients. The Philanthropinists regarded the increased vigor of the body and the recreational effect as the chief benefits of gymnastics. Jahn and his school attached more weight to its fostering patriotism, and this motive finally gave way to a kindred consideration, *viz.*, the advantages that gymnastics affords as a preparation for military service. Independently of these evaluations and tendencies, other forms of gymnastics—for instance, the Swedish system, the purely hygienic physical culture, and calisthenics—followed their own line of development. Gymnastics, as practiced in the schools, was influenced by all these movements, and it must be admitted that mistakes were made in submitting to some of these influences. The value of gymnastics has also been exaggerated at times; *e.g.*, the representatives of "muscular education," a fruit of English utilitarianism, are clamoring (upon the grounds of their exaggerated demands for physical culture) for a complete reform of education.

Though we can not learn from the English on this point, still on another point they may well teach us how to improve our school-gymnastics. The English are fortunate in having preserved in their gymnastics national traditions; their sports are nationally popular; and we have done well in imitating

[1] Plato, *Rep.*, III, p. 410.

some of their customs by encouraging children's games and the like. There is much to be gained by continuing in this direction. Athletic games, for instance, are apt to strengthen the power of the will, and they are, indeed, far superior to the most elaborate system of school-gymnastics. For one thing, the movements and exercise required in these games are pleasant; and, what is more, they have a meaning. Another point in their favor is that the rule of the game takes the place of the commands of the teacher of gymnastics, and thus the strength and the enjoyment are disciplines without being curtailed; the teacher's place is taken by the captain, who may be one of the players. Finally, because of the traditional character of the games, the young people may regard themselves as called to preserve them as boons of tradition; and, as a matter of fact, the players are, in this respect, the custodians of a national inheritance.

PART IV

THE PROCESS OF EDUCATION

I

THE ORGANIZATION OF THE CONTENT OF EDUCATION

THE PROGRAM OF STUDIES

CHAPTER XXXIV

Introductory

1. Intellectual treasures are, like material goods, objects of our desires; they are sought after, and are acquired; and so they involve, like material goods, the activity of offering, imparting, and transmitting. This transmission of intellectual treasures can be considered either as a whole, *i.e.*, with a view as well to the social factors, which determine it to some extent, as to the social institutions, through which and by which it is carried on; or it can be considered in the individual case, *i.e.*, in regard to the individual that seeks a share of the treasures and thereby acquires an education. In keeping with the plan outlined in the Introduction,[1] we shall reserve the social treatment of the subject for the part dealing with the system of education, and shall here examine how the individual, with the assistance of other individuals, acquires an education.

The acquiring of education is here understood to include every intellectual acquisition that has any, whether close or remote, connection with education. Such an acquisition may be either an intellectual content or a physical modification of the subject (the pupil). The concept of acquiring an intellectual content is synonymous with the concept of learning. Even if the two terms do not altogether overlap in meaning, since the work of learning may be determined by other than educational ends, yet this does not preclude all learning from having, at least in its results, some, though perhaps remote, connection with education. In theory, the acquiring of physical modifications can not be separated from the acquisition of an intellectual content, for every acquired modification—*acquired*, in contradistinction to those modifications of the subject that are the

[1] Cf. Vol. I, Introduction, IV, 8.

result of physical development, of sex, age, etc.—has some relation to the acquisition of a content. Thus the whole process of acquiring an education can be traced, directly or indirectly, to the work of learning.

The acquiring of an education proceeds from a content, but the mind may assume different attitudes towards this content. The acquiring of knowledge implies a direct grasping of the content. But if the object is not knowledge, but a certain ability, the proximate object of the acquiring will be certain activities tending toward the respective ability; but as every ability is based on an intellectual content, this content is, in the present case, the remote object. In the case of reading, writing, figuring, singing, or drawing, the content is so closely connected with the respective ability, that the acquisition of the latter is inseparable from the acquisition of certain elements of knowledge. But even in other cases in which the object is the acquisition of bodily skill, there is always some definite purpose, some idea (therefore an intellectual content), which governs and modifies the whole process, and this intellectual element differentiates learning from the training given to the brute.

Knowledge and ability agree in this that they are the direct objects of learning. Other phases of education, however, are not the direct results of learning. For instance, the world-view, taste, tact, mental disposition, etc., can not be learned; but learning is, nevertheless, an important factor in acquiring and subsequently modifying them.

Learning binds itself more or less strictly to its content, and this circumstance offers another opportunity for an important differentiation. A certain kind of education may be acquired from sense-perception, observation, experience, reading, social intercourse; and these factors either precede, or accompany, or supplement the learning proper, *i.e.*, the learning of the schools. We may call this process of learning a free acquiring of education (*freier Bildungserwerb*).[1] But *free* is here used not in the sense of voluntary—for the regular studies of the schools can and should also be pursued voluntarily—but rather in the free attitude of the pupil toward the content, of which he assimilates only certain elements, whereas the process of education proper binds itself to the content, which it would assimilate as completely and thoroughly as possible. Though the process of education

[1] The term *informal* expresses better than the term *free* the irregular nature of this kind of education; hence we shall designate it hereafter as *informal education*. (Tr.)

proper does not include all educative forces, it may still be employed to designate the whole field of inquiry, as it is the fixed centre of all related activities.

2. To acquire an education, the individual needs, indeed, the co-operation of others; yet the chief requisite is that he be self-active. This co-operation is not seen in one's own sense-perceptions, observations, and experiences; but, though not seen, it is still there, for even in these activities there is a potent influence from our environment, and it is the external influence that first enables the child to be self-active. In informal education this co-operation is largely unintentional and not infrequently even unconscious. In the work of education proper the co-operation of others is strongest and most thorough. Here the co-operation may be personal, as of the teacher, or impersonal, as that of the author of the textbook or of the organizer of the school. The concept of teaching is closely related to these different functions.

The following definition of teaching will serve for the purpose of comparing the teaching process with kindred activities: to teach is to present an intellectual content for the purpose of having others assimilate it. The teacher, in common with the poet, the writer, and the orator, has the task of presentation; but the end he has in view differentiates his work from that of the others. The poet presents to elevate, to please, to entertain, etc. —his primary aim is, therefore, to produce certain effects in the reader; but if he has, besides his primary aim, a further object in view, namely, to have the matter presented in his poetry assimilated by the reader, he is both poet and teacher. Analogously, the same is true of all writers. The orator strives by means of the presentation of his subject-matter to convince, please, or persuade his audience; he regards his subject-matter primarily as a means to an end. But if he strives at the same time to have his audience make the matter of his discourse their own intellectual possession, he is a didactic orator; and to this class all preachers belong. The primary object of the teacher's endeavors must be the content and its assimilation by the pupils. This primary aim does not relieve him from the obligation of striving to produce in his pupils certain mental states and modifications, but the latter must always be regarded as remote effects.

But examined more closely, the above definition of teaching appears inadequate, because too narrow, and that for two reasons. In the first place, it fails to include the arts (*Fertig-*

keiten), whereas these, too, involve the imparting of an intellectual content, though it is not presented. Secondly, the definition ignores those methods of teaching in which the content is not presented, but treated in such a way as to lead the pupil to discover it for himself (heuristic or inductive method). In both cases a content is imparted to the pupil without the interposition of any other factor, that is, directly. Hence our definition must read: to teach a person is to impart directly to him an intellectual content so that he can assimilate it. For imparting knowledge the method of presentation is the common one. In the heuristic method the teacher must lead his pupils to the discovery of the truth to be assimilated. In the case of the arts the teacher must demand certain actions whose end and standard are determined by a content.

3. To teach is to make one learn. But there is a learning without a teacher, *e.g.*, the learning from books; and there is also a learning without teaching, as is the case in what we have called informal education. It must likewise be admitted that many a teacher teaches without succeeding in making his pupils learn; and the latter will not learn until they make an act of the will to assimilate what the teacher offers them.

Instruction is that kind of teaching that sees to it that the pupils learn what is taught. Instruction implies intensive teaching. The instructor may not rest satisfied with the clear presentation of what is to be learned; he must demand its memorization; he must question his pupils on the matter; he must conduct practical exercises to ascertain whether the matter taught is clearly understood and fully grasped; he must be a disciplinarian to be a successful instructor.

The university is the home of teaching, and the school is the home of instruction. The university professor must, indeed, take into account the students following his course; he must adapt his lectures to their needs and ability, but can not be held responsible for their advancement. But the school teacher has other duties besides that of teaching; he must see to it that his pupils acquire knowledge, and must use the proper means to this end. Though he should not go to the extreme of the cramming process, he must beware of the lecture method. Mere teaching only brings within the pupil's reach the content of knowledge, while instruction implies that the new content really enters the mind. We speak of a person teaching a subject, but instructing *in* a branch to imply that the instructor is expected

to be in the midst of his subject, while the teacher merely imparts the knowledge of it. There is an art of teaching and a technique of instruction, and the instructor should be master of both. The *donum didacticum* is the natural ability for teaching, but the talent for instructing is something else: it contains something of what has been humorously described as the schoolmaster's instinct.[1]

4. The content which the teacher presents and the material with which the instructor deals must be arranged with a view to their assimilation by the pupils. But the teacher and instructor must bear in mind that they are dealing, not with raw material, but with a more or less formed content. The science or the art to which the respective content belongs and the tradition of the schools have given this material a definite form, and hence the content appears either as part of a course of study, or in the form of a textbook, or of some other didactic instrument. This formation of the materials, which precedes the formation at the hands of the teacher, we shall call didactic formation, to distinguish it from the didactic technique, *i.e.*, the method employed by the individual teacher or instructor.

The single school subjects are the object of this didactic formation, and the methods of the latter would therefore—because of the diversity of the materials—seem to offer a great variety. But only in their union do the various school subjects constitute the educational content, and this union is the object of the formation of a higher order, which formation produces, when applied to existing conditions, the curriculum and the program, or system, of studies. To express the organic character of this formation, we shall designate it as the organization of the content of education. The didactic formation and the organization of the content of education are, like teaching and instruction, important factors in the acquiring of education, but they are indirect factors, while teaching and instruction are direct ones.

A comparison will illustrate the relationship between the three steps, *viz.*, didactic technique, didactic formation, and didactic organization. The didactic technique is analogous to the skill of the artist in selecting and placing the little pieces for mosaic work; the didactic formation determines, as it were, the figures to be represented; and the curriculum, or the organization of the educational content, shows the entire picture, of which the single figures are but parts.

[1] *Supra*, ch. I, 3.

The different attitude assumed by each of these three steps toward the subject and object[1] is significant. During the work of the first step the teacher must be concerned chiefly with the object; his guiding principle must be the following: teach so that the subject-matter will be learned. But he who would do justice to a whole branch, must direct his attention mainly to its educative content, which he must bring out as far as possible. Finally, he who would organize the whole course of instruction, must be guided by the formal principle which demands that each single element be placed where it will best further the growth and development of the whole. He must, then, bear in mind that all must be directed toward the intellectual growth of the whole man, and this in turn will lead him to the final consideration—the moral end of man.

5. In treating the process of education, we may follow either of two methods. We may begin with the work of the individual in acquiring an education, *i.e.*, with the work of learning, and proceed to the co-operation of others, *i.e.*, teaching, and to the indirect factors. Or we may begin with the indirect factors, and most properly with the most comprehensive of them, the organization of the content of education, and thence come down to the didactic formation and the didactic technique. If we pursue the second method, we shall have to show how each of these factors meets the educational needs of the individual pupil.

One advantage of the first method is that, considered psychologically, all teaching presupposes the work of learning, and hence the conditions under which we learn are the norms for teaching and instruction. The second method, on the other hand, has the advantage that it gives us from the start a view of the whole. This is an important point, because as in teaching, so also in the science of education, there is always a strong temptation to specialize. Yet we must have an idea of the whole picture before we turn to the single figures and place the pieces in the mosaic. Or, as Aristotle puts it, "What is to be done for a single part, must naturally be determined according to what is to be done for the whole."[2]

We shall adopt the second method for the further reason that an inquiry into the organization of the content of education follows naturally upon our survey (in the preceding part) of the whole field of educational materials.

[1] *Supra*, ch. X, 1 and 2.

[2] Aristotle, *Pol.*, VIII, 1; ἡ ἐπιμέλεια πέρυκεν ἑκάστου μορίου βλέπειν πρὸς τὴν τοῦ ὅλου ἐπιμέλειαν.

The Ethical Concentration of the Content of Education

1. "It is our principle," says Plato, "that the young whom we would educate, should not be taught anything that is not directed toward the end of all things."[1] But to Plato's mind the one supreme end of all things is the Supreme Being, Who is also the Supreme Good.[2] An ascending series of educational instruments is, according to Plato, the path that leads to the Supreme Being. The first member of this series is the liberal arts course, which should arouse the noble aspirations of the soul immersed in a sensuous world. The second member is mathematics, and its function is to disclose the thought contained in the sensuous; while the third member, dialectic, must deal with thought in its own sphere.[3] After this stage has been reached, it will be necessary to survey the whole of what has been presented in its single parts, and thus the mutual relationship of the elements of knowledge will be realized.[4]

Plato here supplies all the factors to be considered in organizing the content of education: *viz.*, first, the final end, which is moral and religious; second, the psychological grading of instruction; and, third, the correlation of the materials of instruction. Plato's principles, being inspired by an ideal world-view, have deeply influenced ancient and Christian schools, and we shall do well in basing our inquiry upon his views.[5]

Of modern thinkers, Herbart follows most closely the teachings of Plato, for he also emphasizes most strongly the moral end of education. An important work of his early years, *The Æsthetic Revelation of the World as the Chief Work of Education*,[6] is an eloquent defence of the theory that morality is the whole aim of education. The instruction must serve this aim by sketching a world-picture from every part of which the fundamental relations of the good and the beautiful should appear and appeal to the mind. The end in view is that the judgments evoked by these fundamental relations should become so strong a power in the soul as to wrest the control from egoism. Herbart starts out from the family circle, "for," he says, "in the whole visible world, the family circle is the most beautiful and most worthy."

[1] Plato, *Rep.*, VII, p. 530.
[2] *Ibid.*, VII, p. 509.
[3] *Ibid.*, p. 522, § 9.
[4] *Ibid.*, p. 537.
[5] Cf. Vol. I, ch. IX, 5 f.; ch. XVI, 3 f.; ch. XIX, 1. *Infra*, ch. XXXVII.
[6] *Science of Education and the Æsthetic Revelation of the World*, transl. by Henry M. and Emmie Felkin, London, 1892, pp. 57 ff.

He then proceeds upwards and outwards, and "on the upward step, the supersensuous kingdom must reveal itself." Upwards there is but one step, to God, "the true center of all practical ideas. God must fill the background of memory, and to Him the mind must revert to find rest and peace in Faith." Outwards there is illimitable breadth and depth, but we may distinguish two courses, *viz.*, knowledge and sympathy, which instruction has to guide upwards to God. The starting-point of progressive sympathy lies, as Herbart shows, in antiquity, where Homer's poetry shines as a beacon for all posterity. A crowd of characters comes forth on the thread of history, each one illumined, if possible, by its best classical delineator. Moral and religious discourses should help to digest the material which has accumulated from the reading of poets and historians, and thus the moral distinctions will continue to grow sharper. During all this time there develops on the side of knowledge, the concept of nature in increasing sharpness of outline, while mathematics teaches us to regard nature as a type of law.

2. We may well accept Herbart's starting-point as well as his division of the courses. But between his two courses we see a third, and this third course is reached by proceeding in a straight direction from the family circle: *i.e.*, we extend the concept of house to embrace the home, the people, and the fatherland. Thereby we obtain a series of social unions and moral boons that will serve, not only as ends of the educative process, but also as sources for educational materials. The field reached by proceeding in an upward direction we call Christianity, which term, concrete as it is, assures us of a richer content than colorless abstractions, and also safeguards the fulness of the ideal factors and elements embodied in religion. To knowledge, which is in the field reached by proceeding outwards, we add another factor, plasticity, and so have art besides science. To the element of sympathy we add that of devotion (*Hingebung*).[1] At the same time we recognize an indirect relationship between education and vocation, *i.e.*, the social function of man.[2] Thus we obtain the advantage of having, over and above the smallest moral union, the family, three moral unions, namely, the community, society, and the Church. These three unions are the points of relationship with which the content of education must be co-ordinated. By doing so we may expect to bring home the idea that the development of the

[1] Cf. *supra*, ch. XI, 5.

[2] Ch. VII, 2 and ch. IX, 3.

moral consciousness goes hand in hand with living oneself into the moral world. Herbart conceives knowledge and sympathy as two parallel courses. But we prefer to regard the concepts of devotion, sympathy, knowledge, and plasticity as zones, or rings, which are placed concentrically about a central point.

This central point is the moral and religious end. The zone next to this central point is that field of the educational content that can and should rouse the emotional soul to devotion. To this field belong, therefore, on the one hand, religion and, on the other, the materials pertaining to one's home and native country. We may, with O. Frick, regard these materials as well as religion as belonging to our home; *i.e.*, religion belongs to our heavenly home, the kingdom of God, and the other materials belong to our natural and historical home.[1] The home, however, is more than an object of interest and sympathy: it is an object of intense longing, and the roots of the moral consciousness may be implanted directly in it. Around the first and narrower zone there is the broader one which contains those elements of education that impart to the mind ideal factors, and at the same time arouse in the emotional soul the feeling of sympathy. Around it is placed the outermost zone which contains those subjects that primarily increase only one's knowledge and skill, while affecting the emotional soul only indirectly.

3. Here we have a grading of the educational content in reference to the supreme end of education, and from it we can draw a series of conclusions for the correlation of studies. But the chief rules to be obtained govern the organization of the content of education.

Religious instruction occupies a central position in the curriculum. It is the core subject, and all other subjects should conform to the world-view based on it; *i.e.*, all branches should reflect and confirm the teachings and impulses of the religious instruction. Christian Doctrine is, in this sense, not a branch like the other subjects, but is the trunk which supports all the other branches of study. That it is universal in content, appears also in this fact that it not only permits the connection with various elements of knowledge, but, knowing that it can assimilate all the different materials, even demands this connection. The content of Christian Doctrine is presented in various forms: explanation of Scripture texts, Bible history and

[1] O. Frick, *Die Möglichkeit der höheren Einheitsschule*, 1887, p. 16, in the *Schriften des deutschen Einheitsschulvereins I.*

Church history, systematic treatment of the doctrines of Faith and of the precepts of the moral law, and the science of the forms and ceremonies of public worship. Thus Christian Doctrine has direct connections with philology, history, philosophy, poetry, and music. The tendency to extend the science of religion in these directions, by adding, we may say, outer buildings, was so strong in the early Church that theology treated grammar, rhetoric, and dialectic as parts of its own system and pressed history into its service. A similar tendency led the early Church to appropriate for her liturgical services the prevailing forms of poetry and musical modes.[1] In fact, the early Church had to create a whole content of education, while to-day the Church must co-ordinate with her circle of ideas the educational content which is extant, but which is more or less indifferent to her own character. There is, however, an inner relationship between Christianity and classical antiquity. The languages of Greece and Rome are more than outer buildings, and it is to be regretted that the schools do so little to bring out this relationship. No textbook of Christian Doctrine is complete without such a collection of quotations from Christian and classical writers as will show, on the one hand, the points of agreement and, on the other, the essential differences between the two world-views. The teacher should discuss these points more fully when interpreting the dialogues of Plato and Cicero and the plays of Sophocles. But the adequate treatment of the subject must be held over for the instruction in philosophy.[2]

There was a period in the literatures of the modern nations in which the spirit of Christianity and the spirit of the respective nation interpenetrated each other, and the literary works of that happy age are the connecting link between the religious and the patriotic elements of our innermost zone. Of such a nature is the poetry of Caedmon, the Anglo-Saxon Milton. The Venerable Bede tells us ("Ecclesiastical History," IV–XXIV) that Caedmon was a simple brother in the monastery of the Abbess Hilda at Whitby. He had received "all his poetry as a free gift from God, and for this reason he did never compose poetry of a vain and worldly kind. In all this his aim was to turn men from wickedness and to help them to the love and practice of well doing." It is to poetry like his, with its rich materials of the native English spirit, that we must turn for what is a valuable educational element for men of every age and condition. "The

[1] Cf. Vol. I., ch XVI, 2.

[2] *Supra*, ch. XXIV, 3.

poetry of nature," says Jacob Grimm, speaking of folk literature in general, "is a living book. You may open it at random and begin on any page; you will never exhaust its treasures of wisdom and knowledge."

Folk literature supplies the child with nursery rimes and fairy tales, the boy with historical tales and popular legends, the youth with books of heroes and chivalry, and the awakening literary interest with the medieval cycles of poetry and the national epics. Folk-songs and proverbs are entertaining and educative for men of every age. The instruction in the national poetry should be based on folk poetry proper, on modern poetical works that preserve the tone of folk poetry, and on modern editions of medieval poems. Modern artistic poetry, which is based on antiquity, should be taken up only after the ancient writers have been read to a considerable extent. But the reading of this artistic poetry will lead the pupils back to the Middle Ages, for the literary rediscovery of the Middle ages is contemporary with the end of the modern classical period.

The national literature and what is inseparable from it, the mother-tongue, are those national boons that can be made the object of instruction. But the other national boons, namely, traditions and customs, are transmitted in and through life. Life is also the proper medium for teaching patriotism and the home sense. With regard to transmitting these boons, the instruction can obviously not take the place of actual experiences and living traditions. Yet it may assist and supplement these stronger forces through history, geography, and natural science, and, in this respect, these three subjects extend into the innermost zone.

4. Philology, in its broadest conception, belongs in the middle zone. Antiquity, which is internally connected with Christianity and nationality, is here added to these two factors, and thus prepares the ground for all studies that are to deal with modern elements. Music and history adjoin, on different sides, the classics of language. It is the function of philosophy to elaborate, explain, and unite the ideal elements of the whole field. Here we should follow Plato's counsel to train the young to note the elements of the good and the beautiful to be seen on all sides, just as a man able to read will recognize the letters wherever they meet his eyes.[1] This view of Plato is strikingly similar to Herbart's æsthetical presentation of the world and is

[1] Plato, *Rep.*, III, p. 402.

probably responsible for the latter. Such exercises in the A B C of the moral world should be parallel with the whole course of instruction and should direct it long before philosophy is taken up as a regular subject of study.[1]

The first rule to be observed in selecting the material to be organized for this second zone, is that it be related and analogous to the materials of the first zone, so that the result may be a harmonious circle of thought. Further rules are that none but the best, the classical, the typical, and the characteristic be selected; also that these elements be introduced into the course not in parts, but as whole and compact units, because only in this way can deep and lasting effects be secured. The final rule is that the books read as well as the other materials of instruction be closely connected and of mutual assistance to each other, "so that through the general connection, the gains of each single process are seized and preserved."[2]

Herbart has well contrasted the short-lived interest in anthologies and collections of literary titbits with the broad and abiding interest taken in classics, like the *Odyssey*. Though these classics awake the student's interest only gradually, yet eventually they produce a suspense which leaves such an impression on the mind that all later impressions of the literature and history of the ancients amalgamate with it.[3] Continuing along the line of Herbart's views, Ziller designates the underlying principle as concentration and the materials to which it is applied as "materials for character-training." Ziller also demands that form study and the instruction in the natural sciences be controlled, to a great extent, by the "material for character-training," in order that the latter may include varied learning and exercises and so be co-ordinated the more widely with the circle of thought.[4]

5. We can not but approve of this principle that would make the ethically indifferent materials subserve the moral end of education; but its application is necessarily restricted by the nature of the materials of instruction. We may not reduce the rest of the course to a commentary on the "materials for character-training," but must preserve—despite the necessary adjustment to the moral aims—the educational value proper to

[1] Cf. *supra*, ch. XXIV, 3.

[2] Herbart, *Science of Education*, introduction, p. 89.

[3] *Pädagogische Schriften*, edited by Willmann, II, p. 82.

[4] *Grundlegung zur Lehre vom erziehenden Unterricht*, ch. XIX, especially pp. 427 ff.

each subject and must likewise observe the law of progress that governs each branch. We need not be too solicitous about the material adjustment of the ethically indifferent materials to the supreme end, because a proper treatment will connect them teleologically with this aim. We can give the materials of our third zone a moral turn by focussing them on such phases of the other educational aims as connect these with the moral end. That which is so learned and practiced as to produce inner formation or external skill, is a force for ennobling the mind or for making the pupil more skilful; and is therefore also serving moral ends.[1] All studies and exercises that demand of the mind deep and concentrated efforts, are serving—though their content may, perhaps, not be co-ordinated in all its parts with the ethical materials—the purpose of ethical concentration. This is merely repeating the obvious truth that there is a relationship between *correct* doing and *righteous* doing.

Rich as the instruction is in ethical factors and moral impulses, it can nevertheless not forego the benefits accruing also in this direction from informal education. The latter appears as a companion to all the educational factors belonging to our three zones; it softens the hard and makes pliable the rigid; and in this sense Herbart treated experience and intercourse as complements of educative instruction. The various materials that may be derived from these sources are not bound by any rule, yet they well deserve to be organized and subordinated to the supreme end of education.

CHAPTER XXXVI

Correlation of the School Subjects

1. The first step toward organizing the content of education consists in relating it to the supreme end of education, and the second step consists in bringing out the interconnections between the various materials of the content of education. Only this second step makes the instruction continuous and renders it analogous to organized matter. This point of view is in practice much less common than even that of ethical concentration. Educators will naïvely arrange a course of study by simply joining together different subjects. They regard only the individual content of the several subjects, without once asking

[1] Cf. *supra*, ch. VI, 2.

whether all this mass of heterogeneous materials will coalesce into an organic whole, or whether the parts of the course will correspond to and complement one another. The only bond that connects the branches is, in the eyes of many a pupil, the strap that holds together his school books. This is significant of the atomism prevailing in modern education, which attempts to produce a living organism by merely bringing together various subjects, as though something living could ever result from a mechanical juxtaposition of things. In opposition to these false notions, Plato insists justly and in agreement with his organic world-view, that all subjects be surveyed in the light of being connected with one another, and that they can not be understood except in the light of these interconnections.

The ancients regarded this view as an established principle. Cicero refers to it as to a universally acknowledged truth when treating of the common bond that unites all noble and humanistic studies, and which, if fully recognized, allows us to realize the wonderful concord and harmony of science.[1] Vitruvius gives the same view a didactic turn when treating of the various sciences that the architect is in need of. "To the inexperienced," he says, "it will seem a marvel that human nature can comprehend such a great number of studies and keep them in the memory. Still, the observation that all studies have a common bond of union and intercourse with one another, will lead to the belief that this can easily be realized. For a liberal education forms, as it were, a single body make-up of these members. Those, therefore, who from tender years receive instruction in the various forms of learning, recognize the same stamp on all the arts and an intercourse between all studies, and so they more readily comprehend them all."[2]

Christian thinkers upheld the view of the organic unity of science. The *Doctrina Christiana* of St. Augustine presents not only a scheme but also a ζῶον.[3] The Schoolmen conceived science as the rational form of recognized truth, and regarded God as the last ground of the unity of truth and, therefore, of science also.[4] The medieval encyclopedists followed St. Augustine and divided the sciences as something objectively true and knowable, whose internal structure must be the standard for

[1] Cicero, *de or.*, III, 6. 21,

[2] Vitruvius, *de archit.*, I, 1, 12; *The Ten Books on Architecture*, transl. by M. H. Morgan, Cambridge, 1914, pp. 10-11.

[3] Vol. I, ch. XVI, 7.

[4] Willmann, *Geschichte des Idealismus*, II, ch. XLII.

any division made.[1] Francis Bacon was the first to divide the sciences according to psychological principles—a fact that is connected with the growth of Nominalism which denied the objectivity of thought. In the Renaissance encyclopedias the subjective viewpoint crowded out the objective,[2] and psychological unity was regarded as sufficient.

The older didacticians did not bring out the organic view, for the reason that they attached most importance to eloquence and erudition and slighted philosophy, thus abandoning the ground upon which the various sciences are chiefly differentiated.

2. Herbart, who was so eager to co-ordinate the school subjects for the purpose of making them into a psychological unit, naturally dealt with the problem of correlation. Its function he described thus: "The interconnections of human knowledge must be investigated in the most accurate manner, so as to enable teachers to set any interest once excited to work immediately in all directions. They must do so in order to accumulate the usury of learning on this interest as well as on the capital that has been acquired, and in order to avoid as far as possible such intellectual disturbances as might diminish the capital."[3] Herbart also discusses the mediatory position of philosophy[4] and the associative character of geography.[5] Herbart's suggestions were carried out and supplemented by Ziller. The whole question has ever since been much discussed, and, though for the most part only psychological unity has been sought, the objective and organic side of the matter spontaneously reasserts itself.

Philosophy is the discipline that is by its very nature adapted to unite the sciences, and only by reintroducing it into the schools shall we obtain the foundation for more unified instruction. We have elsewhere shown that all school subjects meet in philosophy, and that the Aristotelian philosophy is, through its relation to the individual sciences, especially well adapted to be the capstone of instruction.[6] Trendelenburg has demonstrated, in his commentary on Aristotle's logic, that any course of instruction based thereon will touch upon all domains of

[1] Vol. I, ch. XIX, 5. [2] Vol. I, ch. XXII, 4.

[3] *Observations on a Pedagogical Essay*, translated by Eckoff, in Herbart's *A B C of Sense-Perception and Minor Pedagogical Essays*, New York, 1896, p. 71.

[4] Herbart's *Pädagogische Schriften*, edited by Willmann, II, pp. 123 ff.

[5] *Outlines of Educational Doctrine*, transl. by Lange, New York, 1913, § 264, p. 264. [6] *Supra*, ch. XXIV.

human knowledge. It would not be difficult to show that the same is true of an analogous treatment of psychology and ethics. The fact, however, that philosophy combines different elements of science as well as tendencies of scientific research will, of course, only be realized when the study of philosophy is itself taken up. Still, a course of instruction that is, as it were, orientated philosophically can even before this evoke such associations as will prepare the ground for the instruction in philosophy. At all events, philosophy should be taught as a special branch, and incidental propædeutic discussions will not suffice. Such discussions fail as much to obtain the desired results as the reading of chrestomathies fails to produce any results comparable with the profit gained from the thorough study of an entire classic; nay, they fail even more, because they are more heterogeneous than literary titbits. Though the discussions may set the pupils thinking, they will encourage the erroneous notion that mere thinking is philosophizing, whereas philosophy stands in need, more than any other science, of a positive foundation of knowledge.

Geography is the chief associative science, and the map is its unifying scheme. Even young children may be habituated to ask always for the *where*, and this habit will assist them in connecting diversified knowledge. We have elsewhere[1] touched upon this valuable phase of geography, and we have likewise laid down the principle that there should be a continuous interrelation between the sensuous horizon (the pupil's actual environment) and the imagination. This principle is implied in the designation that we recommend for geography—general and home geography (*Welt- und Heimatskunde*). This designation suggests that we make use of the associative power of geography even more than is done at present. The home, for instance, offers historical, geographical, and natural history materials united in one life unit. But to deal with the life units is, as we shall later prove, one of the functions of natural history. Natural history can have no more proper and no more useful aim than to acquaint the pupils with natural objects of their environment, and this knowledge should be imparted by showing these objects in their relations to other phenomena and by comparing them with foreign products. With such a scope, natural history has obviously many points of contact with geography, and these two subjects had, therefore, best be taught together.

[1] *Supra*, ch. XXVII, 1.

As an associative science, history occupies a middle position between geography and philosophy, for time relations are less elementary than space relations and less abstract than rational relations. It is as easy to cultivate the habit of asking *when*, as that of asking for the *where*. The first aim of the instruction in history should be to unite the historical elements contained in all the branches of the curriculum.[1] By pursuing this aim the teacher of history will not unduly extend the scope of his special subject. If the historical chart—which groups materials from political, ecclesiastical, literary, and social history—is properly used as an educational instrument, the teacher of history may occasionally enter into details without fearing to lose the thread of the chief events. Every textbook might have such a historical appendix as will summarize all the historical materials that the book contains. The historical appendix would also be the proper place for brief biographical sketches of famous savants. The historical maps are the bridges connecting geography with history.

3. Because of the universal importance of language, philology is connected with all sciences and should also be treated in the course of instruction as a connecting link between the different branches. But this presupposes that philology will have unified the variety of its own content, and primarily that (a point much dwelt on by Comenius) it will have established the proper relationship between the matter and the form of language. There are two sides to the problem: all language instruction must be related to the content and must insure an increase in the knowledge of things; and, on the other hand, all gain in material knowledge must increase the power of language expression. The first principle should be applied primarily to the reading of authors. Hence no classic should be regarded from its formal side alone, but rather as a source whence much valuable knowledge of things and facts can be derived; *i.e.*, there should be a due proportion between the attention paid to form and that paid to matter. The same principle holds for the elementary language exercises, which should serve other purposes than that of merely "drilling" on the grammar rules. The chapters of unconnected sentences in our exercise books are unorganized material, though their arrangement in regard to the application of the grammar may be artificially perfect. The *Epitome Histo-*

[1] Ch. XXVI, 1.

riæ Sacræ, now gone out of use almost entirely, was a more dignified and also a more rational Latin primer.

The second principle, that all instruction should be such as will increase the power of language expression, should be applied to the instruction in the mother-tongue. It is proper that the exercises in the correct use of the mother-tongue take their material from all the branches taught. To hear the spoken word, to understand what was spoken, to dissect the language forms and then reunite them, to apply in speech and writing the increasing skill—this is the series which one might justly call the philological circle. All foreign language studies should also be focussed upon the mother-tongue, and Comenius rightly claimed that the grammar of foreign languages should be co-ordinated with the vernacular.[1]

The didactic materials of the different languages should likewise be paralleled with one another, and this will facilitate the organization of the content of education. This parallelization is facilitated by the circumstance that the grammars of all modern languages are patterned after the ancient grammar. Comparative philology has, moreover, discovered many parallel features in the phonology and etymology of the different languages. Still, the most important element is the parallelization of the study of syntax, which should be based on logic; but this must be done more intelligently than in Karl Ferdinand Becker's *Organismus der Sprache*.[2] We shall do well in following Ziller's advice to study the native and foreign literatures as parallel with one another.[3] Both modern and ancient authors should therefore be read in pairs. Homer and Vergil, Shakespeare and Schiller, Sophocles and Schiller, Longfellow and Tennyson, Tennyson and Vergil—all these can be read simultaneously.[4] The details of prosody and rhetoric should also be taught more from the viewpoint of being common to all languages. The matter, as now taught by each language teacher, is torn apart and its organic wholeness is thus not realized.

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[1] Cf. *supra*, ch. XVII, 6 and ch. XXII, 3.

[2] Cf. Hornemann, *Gedanken und Vorschläge zu einer Parallelgrammatik*, Hannover, 1888.

[3] *Grundlegung zur Lehre vom erziehenden Unterricht*, XIX, p. 465, etc.; cf. *supra*, ch. XXII, 1.

[4] Cf. Warren, *Vergil and Tennyson* in *Essays of Poets and Poetry* (New York, 1909) and Mustard, *Tennyson and Vergil* in *Classical Essays in Tennyson* (London, 1904).

Every textbook should have, beside the historical appendix, also a terminological appendix to explain all the technical terms used in the body of the book. The *termini* stick longest in the memory;[1] and the explanations, if properly connected with them, will also be remembered more easily, and the full understanding of the technical terms will finally be no small aid to the understanding of the whole subject. Again, the list of technical terms will bring home the intimate connection between the word and the thing expressed. The pupil with a talent for philology will feel at home among the words, but he will also be taught never to separate the word from the thing that it signifies. Another pupil with a talent for the *realia* will be taught the scope and value of language studies.

Such historical and terminological appendices to our textbooks in history, geography, mathematics, physics, natural history, etc., would bring together ancient and modern elements and would attain what von Wilamowitz-Mœllendorff attempted in his *Greek Reader*,[2] which has but this one defect that it is far beyond the class of students for whom it is intended.

4. Of all the school subjects, mathematics would seem to be least adapted to be correlated with the other studies; and, as a matter of fact, it is isolated in modern education. Though its peculiar position in the family of the sciences may partly account for this isolation, yet the principal causes for it are the scant attention given to the threads connecting mathematics with the other subjects and the wilfulness with which the schools abandoned the courses of study in which this branch was properly correlated. In the system of the liberal arts, arithmetic and geometry were continued in the theory of music and astronomy, and the latter was the capstone of the entire course. The restoration of this relationship would mean a great gain for our school mathematics: a course of mathematical instruction that led up to the elements of spherical astronomy would be better rounded off and more compact than anything we have at present, and by aiming at something definite and tangible it would bring out the connections between mathematics and other interests and studies. The starting-point of mathematical instruction should, like its aim, be of the sensuous world, just as the dis-

[1] *Supra*, ch. XI, 4.

[2] *Greek Reader*, selected and adapted with English notes from Prof. von Wilamowitz-Mœllendorff's *Griechisches Lesebuch*, by E. C. Marchant, London, 1906.

covery of the limitations of the latter is one of the functions of mathematics. Figuring connects arithmetic with the circle of experience, and the attempt has been made to establish similar connections for geometry by means of geometrical object lessons. The science of geometrical sense-perception should be considered, as Fresenius puts it, as "a grammar of nature." By co-ordinating the object lessons with drawing and natural history we shall obtain what is called form study, a subject whose content connects it with various other branches, but whose chief aim is to fit the mind for systematic geometry.[1]

A further means for correlating mathematics—and one that will at the same time correlate also physics, a related subject—consists in the proper use of the history of mathematics and physics. Both these sciences are traceable to the ancients, though they did not teach physics in the schools. The teacher should therefore not rest satisfied with the mere names of the Pythagorean theorem, the Archimedean principle, the Hippocratic moons, but should use the occasion for presenting the presuppositions and methods of the ancient scholars. Our school geometry is at present following too closely the methods of Euclid, without, however, avowing its indebtedness to the Alexandrian mathematician. The contrary course would be the right thing: to acknowledge gratefully the debt we owe the ancient teacher, but to exchange his rigid demonstrative form for the more pliant genetic method.[2]

The historical connection of mathematics with music may recall that mathematics as well as physics are internally connected with the fine arts. But on account of the subordinate position that the fine arts occupy at present in the school curricula, we lose sight of these internal relations. Acoustics, for example, is basic for the theory of music; optics, for the theory of drawing; and mathematics, for the science of the beautiful. Mathematics and æsthetics are, indeed, so closely interconnected with each other that they have been said to coincide. "Æsthetics," says Zeising, "coincides, in a certain sense, with mathematics, the only difference being that mathematics is concerned with nothing else than the rationality of the sense-perception of space and time, whereas æsthetics inquires into the effect of this rationality upon the feelings."[3] The science of the golden sec-

[1] Cf. *supra*, ch. XXXI, 2 and ch. XXXII, 3.

[2] For the details see *infra*, ch. XLIV.

[3] *Neue Lehre von den Proportionen des menschlichen Körpers*, Leipzig, 1854, p. 122.

tion, which abounds in educational elements, occupies the borderland between mathematics and æsthetics.

5. When arranging a course of study, the educator should remember that the units currently established in the schedule of recitation periods, *viz.*, Latin, history, physics, etc., are not the only ones that deserve attention. Other important units are: language studies; literature studies, classical antiquities, knowledge of the home environment, knowledge of one's native country, etc. These domains are apportioned among different branches and teachers, which is unavoidable. But still, it remains a deficiency that can be remedied only by a careful attention to the interconnections. Consequently the school should, in every possible way, do justice to the actual interrelation of the materials. The unavoidable framework should not conceal the thing itself, and the lines which we draw for facilitating the study of the picture should not cut up into disjointed parts what is to be appreciated in its entirety.

The teacher of every branch must ever be alive to the points of contact between his and the related subjects. He must draw the attention of his pupils to these points, must let them realize the importance of being familiar with the borderlands, and correct any defects he might note in this regard. This presupposes, of course, that the teacher be interested not only in the subject he is teaching, but in all the branches taught in the school, and that he may never be out of touch with any of them. These are no exaggerated demands, for we can not expect more of the pupils than of the teacher, and the teacher must in all things be a model to his charges.[1]

CHAPTER XXXVII

The Psychological Principle of Grading

1. In establishing the moral aims as the principle of the organization of the educational content, and in recognizing the need of correlating the school subjects, we might follow both Plato and Herbart. But Plato alone must be our guide in grading the studies, as Herbart does not accept the views ex-

[1] Cf. *Correlation* in Monroe, *Cyclopedia of Education*, and Burns, *Correlation and the Teaching of Religion* in the *Catholic Educational Association Bulletin*, Vol. XI, No. 1, pp. 37-49.

pressed on this subject in the *Republic*. Both thinkers agree, indeed, on the one hand, in making poetry the beginning and philosophy the end of the liberal arts course. But, on the other hand, Plato recognizes mathematics as the middle member that connects the two extreme members, while Herbart knows no middle term.

This divergence, though apparently insignificant, is grounded on basic differences. Plato considers the sensuous world and the ideal world to be essentially different, and consequently regards the faculty that perceives the former as essentially different from that which perceives the latter. As mathematics is the rational cognition of the sensuous, it appeared to his mind as the intermediary between sense and understanding. Christian thinkers adopted Plato's views, and made mathematics, under the form of the Quadrivium, the middle step between language studies on the one hand and philosophy and theology on the other. This position is the true reason why mathematics was, in the Middle Ages, not confined to surveyors and merchants. Mathematics has thus retained its position not only because of tradition, but also because of the agreement between the Christian and the Platonic idealism.[1] But Nominalism, which obtained the ascendancy toward the end of the Middle Ages, denied that universal terms have any objective, real existence corresponding to them, and maintained that they are mere words, or names, mere vocal utterances, *flatus vocis*. Thus the fundamental difference between the sense and the spirit, between sense-perception and mind-perception was denied, and there was no more need of a connecting link between sensuous and rational cognition. Therefore the system of the seven liberal arts, which is traceable to Plato, was in principle as much opposed by Nominalism as by its more outspoken enemies, the Humanists, who ultimately destroyed it. Similarly, the modern curricula do not in principle allow mathematics to function as the connecting link between the empirical and the rational elements of instruction; but actually mathematics still occupies a middle position, at least in those schools where philosophy continues to be taught. We contend that what is actually the case should again be recognized also in principle, and then the structure reared by the thinkers in the olden times would reappear. This structure is, if we may continue the simile, built in the basilican style. It is ancient in origin, yet Christian in char-

[1] Cf. *supra*, ch. XXIII, 5, and Vol. I, ch. XIX, 1.

acter. But the Renaissance, misled by the Gothic annex, failed to recognize the beauty of the whole, and so began to build over it, and the modern age has still further hid it by several characterless additions.

2. Language studies, mathematics, philosophy form a series that is based on psychological grounds, and that is of prime import for arranging the sequence of studies. The elementary character of language studies consists in their being empirical: inductively they reduce the language phenomena to rules, and the latter admit of immediate and varied application. Language studies are, at the same time, the key to varied material knowledge, since poetry and prose deal with the material of sense-perception. Mathematics, however, is a rational science. Its content is obtained chiefly by deductive reasoning, and it starts the mental processes of discovering causes and of drawing conclusions.[1] But it is elementary in that it deals with sensuous quantities, and thus it clings, one may say, to the balustrade of the sensuous world. Furthermore, mathematics admits, as the "science of problems,"[2] of immediate application of its content, and thus it also leads the pupil back to the sensuous world. Philosophy employs, like mathematics, rational and deductive methods; logic is related to language studies, and admits of varied application; but it and psychology and ethics, still more, demand such exercises in abstract thinking as exclude almost all concrete illustrations.

The same relationship exists between the steps involved in understanding the content of language studies, mathematics, and philosophy.[3] The philological understanding implies the grasping of the meaning in the words, and the interpretation of the words through the meaning; what has been understood must here be reproduced or translated, and it is well to memorize it. To understand a mathematical proof, it is not enough to grasp its meaning, but one must grasp its soul, its essence, the grounds on which it is based. The mathematical proof, if understood by the pupil, is not merely reproduced, but is given anew. If the pupil must memorize the proof, it is obvious that he has not understood it; once it has been understood, the formula, or the construction is a sufficient memory aid. The formula and the construction are, therefore, with the abstract procedure of mathematics, aids to the understanding. But philosophy knows no such aids, nor is it assisted by the practical understanding.

[1] *Supra*, ch. XXIII, 3. [2] *Ibid.* [3] Cf. *supra*, ch. XI, 4.

To find is also an important didactic function. In philology we find words, meanings, modes of application, analogies, etc.; and in mathematics we find solutions. In philology one must use tact and discretion in distinguishing a worse and a better find; whereas in mathematics we have only the eureka and its opposite.[1] In philosophy the searching, but not the finding, is the work of the pupil. The latter is prepared for philosophical research by the findings of philology as well as of mathematics, more directly by the findings of mathematics.

The capstone of philological instruction is a system of knowledge elements. The capstone of mathematical instruction is a system of truths, which are held together by internal relationship and their homogeneous nature, and which are, consequently, more readily perceived and grasped than the complex of truths that philosophy presents. Hence mathematics is also in this regard a preparatory step for the study of philosophy.

3. Allow mathematics its middle position and you have the proper grading of the domains belonging to geography and the natural sciences. The relationship between these subjects and mathematics is not the same for every one of them, for they partly presuppose it and partly they do not, and hence mathematics can here also determine a higher and a lower grade. For instance, descriptive and political geography as well as natural history can be taught without a knowledge of mathematics. But astronomical geography and natural philosophy presuppose a knowledge of mathematics and of mathematical method. As was shown above,[2] it is best to treat geography and natural history as one subject, *viz.*, general and home geography. Astronomy is best taught in connection with mathematics.[3] Geography and natural history are, then, elementary; and physics and chemistry, advanced studies. History occupies a middle position between the elementary and the advanced studies. It is based on geography, but its viewpoints are much broader. In offering good opportunities for training the memory and developing the imagination, history is elementary in character, but as being the "picture-book of ethics" and the "mother-city of philosophy" it is directly related to philosophy.[4]

This second grading of the school subjects, namely, general and home geography, history, natural philosophy, comprises the three accessory branches (polymathy is not a school subject),

[1] *Supra*, ch. XXIII, 3.
[2] *Supra*, ch. XXVII, 2.
[3] Ch. XXXVI, 2.
[4] Ch. XXVI, 3.

while the first grading is composed of three basic subjects. The fourth of the basic disciplines, theology, must, considered as science, occupy a higher position;[1] but as an educational element it is interwoven with the three steps. The historical element occupies also in theology a middle place; for it is based on the elementary religious instruction, but prepares for the systematic presentation of theology.[2]

The arts (*Fertigkeiten*) that enter into general education represent no sequence. Music and graphics must be taken up early and must be continued for a long time; and the benefits accruing from technological training and gymnastic exercises are desirable at any and every period of education. But in music and graphics there must be an advance from technical to artistic skill, and in this sense we may distinguish the step of purely technical training from that of technico-artistic practice.

4. Though we have now graded the disciplines, we have not yet determined whether the several subjects are to be taught successively, or whether the elementary studies should be continued side by side with the advanced, or whether the pupil should prepare for the advanced subjects while still occupied with the elementary branches. To teach the different subjects successively is better for the organization of instruction, because the mass of material, if presented at one and the same time, prevents its being elaborated, and militates, therefore, against concentration and depth. Hence it was in the interest of thoroughness that the earlier didacticians laid down the principle, "*Nonnisi unum uno tempore*," (Only one thing at a time). For the same reason later educationists favored the so-called continuous instruction.[3] For the sake of concentration and the

[1] Ch. XXV, 4. [2] Ch. XXV, 3.

[3] Kuithan, who treated the question in Gutsmuths' *Bibliothek*, 1803, III, pp. 296 ff., was the first to use the term "*kontinuierender Unterricht*." He contends that only a few subjects should be treated at the same time. Of the opposite practice he says: "The method followed in the schools to-day, where the pupils change their subjects with the hour, not infrequently breaking off when their interest is at its highest, can not fail to produce continual distraction. Rapid progress is impossible so long as heterogeneous materials are even in the best schools crammed down the pupils' throats. It would much improve our schools, if the whole morning were given to one subject, the afternoon to another; for in this way the whole and undivided attention would be secured for one and the same subject. We might, for instance, devote one week, one month, or one quarter, to the continuous instruction in two, or three, subjects; one author might be read, one period of history completed, and then the pupils might take up other subjects." He disposes of the objection, "Va-

totality of the results of instruction, Herbart likewise insisted on a method of teaching, "which follows the uniform track of the same interest without a break," and forbade all that might disturb continuity.[1] He, therefore, praised the schools of the Jesuits for always making one subject the chief in the course of study; and he adds that this is "in some, though not in all, points the only possible key to the proper arrangement of the time-tables of instruction."[2]

Modern instruction inclines to increase in breadth, and hence it is a special duty of the science of education to inquire whether it be not at times advisable to let certain branches succeed one another instead of teaching them simultaneously. Still, there is a limit to teaching the school subjects successively, for some branches must, to bear fruit, be dealt with for a long time, *i.e.*, they must be begun early and be continued throughout the entire course. This is true particularly of the basic subjects, which can, therefore, not be taught successively. For example, the philological instruction must, because of the extent of its subject-matter and the great number of exercises needed, be continued through the entire course; still, the literature side must be stressed in the higher classes. For mathematics, on the other hand, even the elementary school must prepare, first, by arithmetic and, next, by form study.[3] There is, however, no direct preparation for the instruction in philosophy; though certain school subjects prepare for it indirectly. If the teachers pay due attention to the grading of these branches and insist that time and energy be devoted in each case to any new subject that is taken up, the simultaneous study of the basic subjects will not distract the mind.

The accessory branches, however, may well be taken up successively, and that without any loss. Let the teachers of history and geography realize that the school can not do full justice to these subjects—a task that is a life work[4]—and then they will agree that the curriculum be so arranged that geography, history, and natural philosophy be taught not only successively, but that each of these subjects be completed when

rietas delectat" by observing that each branch contains a variety of materials. Jean Paul well says, "The dislike of the sameness will soon be lost in the pleasure of progress; and the science thus grounded and daily increasing its limits will in time present a variety of flowers" (*Levana*, § 142).

[1] *Science of Education*, transl. by H. M. and E. Felkin, London, 1892, p. 190.

[2] *Pädagogische Schriften*, edited by Willmann, II, p. 238.

[3] *Supra*, ch. XXXVI, 4.

[4] Ch. XXVI, 4 and ch. XXVII, 3.

taught. It might, nevertheless, be possible to prepare for history, before this subject is taken up. Accordingly, we do not hesitate to apply the principle of continuous instruction to the accessory subjects, and thereby we also remove the danger of having these branches encroach upon the basic subjects. By thus applying a maxim of the ancient Romans, "*Divide et impera*," we shall effectively safeguard their own language.

We have found that the school subjects can be grouped in series of threes. But upon closer view we note four steps, because the first member of each group can and must be divided into two steps. The language instruction deals first with the mother-tongue and only later with foreign languages. Arithmetic is the elementary preparation; and form study, the advanced preparation for mathematics. In geography the environment of the home should receive first attention, and the study of foreign countries should mark an advanced grade.

CHAPTER XXXVIII

The Historical Principle of Grading

1. Plato's principle of grading the branches in accordance with the intellectual development of the pupils sufficed for ancient education, simple as it was in content. But modern education has in the course of its development assimilated such various historical elements as to call for an inquiry into the proper grading of them. In this inquiry we must follow the historical principle, which demands that what was earlier in time take precedence also in the sequence of studies. We shall generally find that what was earlier in time is the key to what followed, and that the study of the growth and development of anything leads most simply to the understanding of it. This principle is stated by Aristotle thus: "The best method of studying a thing is to observe its development from the very beginning."[1]

What was actually earlier, is, from the viewpoint of the observer, the more distant, and in order to study it we must pass over what lies next to us. If this passing over what lies near to us offer little or no difficulty, then the historical prin-

[1] *Pol.*, I, 2, in. Εἰ δή τις ἐξ ἀρχῆς τὰ πράγματα φυόμενα βλέψειεν . . . κάλλιστ' ἂν οὕτω θεωρήσειεν. The genetic principle expressed in these words we shall have to discuss more fully in connection with the didactic formation, ch. XLII ff.

ciple should be applied. But if it involve the neglect of what is close at hand, then we must adopt, instead of the progressive method of study, the regressive, and must be satisfied with subsequently explaining that which is later in development through that which was first. Thus the historical principle is limited in its practical application by that which lies close at hand; just as the principle of concentration is limited by the peculiar character of the single subjects, and the principle of continuity, by the necessity of treating simultaneously several branches.

2. Herbart's idea of an æsthetical presentation of the world is based on the historical principle. This principle has never been better stated than by Goethe in the following words: "The youth must always begin anew at the beginning, and as an individual traverse the epochs of the world's culture." Herbart would have the young begin with the ancients and thence proceed to the moderns in such a way that the boy take up first the Greek classics, then the Latin, while the youth should study modern languages and literatures.[1] Of the poets, he would have Homer, and of the historians, Herodotus read first. Kohlrausch enlarged the series by adding the Old Testament, which he placed at the head.[2] Ziller added tales and legends from the Middle Ages, to serve as introductory and parallel materials. Though the latter arrangement sacrifices the chronological order of development, it substitutes a didactically correct series; for the Middle Ages are the antiquity of our country and are nearer to us than classical antiquity; while the Old Testament is the antiquity of our Faith, and for this reason alone, not to mention others, it merits precedence. Even if Roman literature is largely only an imitation and a further development of Greek literature, yet the chronological order is not needed everywhere for the proper understanding of the respective classics. Homer should, indeed, be read before Vergil; but Demosthenes and Cicero, the dialogues of Plato and Cicero, may without any loss to the understanding of their spirit be read simultaneously. In fact, the majority of the Greek classics can be appreciated by mature youths only. Homer and Herodotus stand alone in their appeal to the interests of young children; and to these young children their educational content is accessible in adapted translations that should be paralleled with myths and legends treating of native heroes. The historical principle, as applied to the differ-

[1] *Pädagogische Schriften*, edited by Willmann, I, pp. 77, 292, 441, 446.
[2] *Ibid.*, I, p. 599.

ent classes of literary works, demands that those which were developed earlier be read before those developed later, *i.e.*, that the epic be read before the lyric, that dramas and histories be read before orations and philosophical works. Accordingly, we should have the following sequence: Biblical antiquity and national myths, tales, etc.; heroic tales and myths from national and classical antiquity; epics and histories of classical antiquity; lyrics, dramas, orations, philosophical writings.

3. To demand the chronological order for the study of the two ancient languages, *i.e.*, that Greek be studied before Latin, is a misapplication of the historical principle. If the language instruction were to be governed in this wise by the historical principle, consistency would demand not only that Greek be studied before Latin, but also that Old-German be studied before modern German. But the character of the two ancient languages as well as their different relations to present-day culture speak for the traditional order of teaching Latin and Greek,[1] and the inversion of this order would do violence to the educative content of language studies. Just as the pupil is introduced into Biblical antiquity through Bible history, which is an adaptation of Scripture, so he can also be introduced into classical antiquity through adaptations of Greek epics and histories. In this way we shall easily carry out one of Herbart's favorite ideas—one that was inspired alike by a devotion to the beautiful and by a deep interest in the young—the idea, namely, of letting the Greek epics and the oldest histories serve as the propylæa of classical antiquity. Any experiments made on a larger scale to teach Greek before Latin would hardly further the domestication of the former, but would assuredly shake the foundation of the classical studies and thus play into the hands of their enemies.

CHAPTER XXXIX

The Educative Process and the Age Periods

1. To give a complete picture of the steps of the educative process, it is necessary, indeed, to establish the sequence of the school subjects. But this is not enough: we must view the educative process from the standpoint also of the subject, or pupil, and co-ordinate its steps to the periods not only of intellectual growth, but of the total growth. This method of study-

[1] *Supra*, ch. XX, 4 and 6.

ing the question is analogous to the one we adopted when we examined first analytically and then synthetically the motives and aims of education (chapters VIII and IX). The educational ideal which we treated there is also analogous to our present subject, for it represents the highest point to be reached by the steps of the educative process.

The growth of human power is, to a certain extent, continuous, and, considered as a whole, it resembles more a gradually ascending path than a flight of stairs. But nature and, following her, society, have divided this path into certain periods, which are like the steps that bring us always closer to our respective goal. We shall adopt these age periods as convenient divisions of the growth of the young mind. In keeping with our aim, we shall regard the ascending periods only, and shall also confine ourselves—since there is no question as yet of differentiating education for the two sexes—to the development of the boy, whom we shall consider so fortunately situated as to enjoy the full benefits of a complete general education.

Childhood, boyhood, and youth are the three main periods in the life of the young. Puberty distinctly marks the beginning of the third period, but the first two periods are not so clearly distinguished from each other. Each of these periods is again divided into two periods, and the points of division are marked by circumstances that are established by customs and legal traditions; and these customs and traditions are themselves based on natural conditions. The first period of childhood ends when the child begins to go to school; the first period of boyhood ends when the boy begins to feel himself mature; the first period of youth ends when one reaches the age that fits him for military service. Thus we have for the time from birth till physical maturity and the legal age of majority six age periods: 1. early childhood, six years; 2. the school period of the child, four years; 3. immature boyhood, three years; 4. mature boyhood, three years; 5. early youth, from puberty till one is fit for military service, four years; 6. later youth, the period of military service, four years.

2. Early childhood is the period of rapid physical and mental growth. Education during this period, however varied, should be free and informal. The most important factor is the learning of the mother-tongue, which marks the first step in the process of assimilating the young generation to the old.[1] Towards the

[1] Vol. I, Introduction, I, 4.

end of this period growth is less rapid,[1] the second dentition takes place, and the child begins to distinguish good and evil. At this stage, the primary school must step in. But the reality should not violently displace the dream of childhood, and the play instinct should not be checked. The instruction must begin to plant, but it should not crush the flowers and shrubs that spring up spontaneously. Religious instruction is the higher element that the primary school presents to the awakening mind; and the child must learn reading, writing, and arithmetic. In all other matters, the primary school should adapt itself to the ways of the child's little world: anything that is offered by the home and the immediate environment should be utilized for training the senses and the young imagination. The mother-tongue, national myths, tales and legends, folklore, folk-songs—all are homogeneous to the child's circle of thought and widen his mental horizon. Object lessons, training in observing, developing the form sense by simple drawings and constructive work—all this will prepare for natural history and form study.

The first tokens that the child has grown into boyhood, the second period of the educative process, are the spirit of independence and the consciousness of strength. Though the growth of muscular strength is less rapid during this period,[2] the total increase in strength is psychologically the more marked. The boy is as fond of play as the child. He is as imaginative, too, and as curious to see new sights. But he is more energetic in all these things: boy's games are rough, and teamwork is introduced. Furthermore, a boy's interest is not satisfied with seeing: he is eager to collect things and (a kindred inclination) to roam through woods and fields; his fancy is busy with picturing adventures on land and sea. Because of these "heroic impulses of the boy's nature," the school should offer the lads heroic tales and legends. From a study of the home environment geography should now proceed to the study of foreign countries. Object lessons may now be replaced by natural history. The

[1] According to Quetelet (*Physique Sociale*, 1869, II, p. 16), the male child grows in his first year 198 millimeters; in the second, 98; in the third, 71; in the fourth, 63; in the fifth, 56; and he continues to grow almost steadily at this rate till 16, *i.e.*, till puberty.

[2] According to Quetelet (l.c., p. 115), the gripping power of the two hands, measured with the dynamometer, amounts at the age of 6, to 10.3 kilograms; at the age of 7, to 14; at the age of 9, to 20; at the age of 10, to 26; at the age of 11, to 29.2; at the age of 12, to 33.6; at the age of 13, to 39.8; at the age of 14, to 47.9; at the age of 15, to 57.1; at the age of 16, to 63.9; and thus the increase between the ages 10 and 11 is the minimum, 3.2 kilograms.

map and the comparison of nature-forms will supply abundant material for drawing, and the latter should enlarge its scope to include form study so as to prepare for mathematics. The elements of foreign languages, which should be taken up at the age of ten, should receive pretty much time. If the child must master the general elements, then the young boy must acquaint himself with the elements of study. Foreign languages, particularly the ancient languages, appear to be a burden when one considers only the work that they entail. However, when one considers how much they promote mental culture, they appear to be a helpful sail. It is the function of language instruction properly to set this sail. Hence the teacher should compensate for the necessary memory work by the many-sided exercises of the understanding that are available; he should raise linguistic knowledge to linguistic skill; and should make use of the plurality of languages for developing the language consciousness. Of the boy we may say with the poet, that he should spend "many hours travelling through books and divers tongues." Among these books he will find also pleasant fellow-travellers. A favorite book, whether a book of tales, or *Robinson Crusoe*, or whatever else it be, may command full interest and may shape a boy's whole future career.

3. The beginning of the third period of the educative process, that of mature boyhood, is remarkable as being the time of strongest vitality.[1] It is a period of rapid physical growth, and the features begin to reveal the mental development: there is more expression in the face; the eye is more eloquent; and the forehead begins to shape the "dome of thought, the palace of the soul" (Byron). There is deep thought in Rückert's lines on the growing structure of the forehead:

"But now I saw above the eyes
The columns, bows, and towers rise;
And 'neath a roof of golden locks
The structure slowly vaults and rocks;
High swings the arch, far-flung and free—
God's blessing on this building be!—
A mind of man thus rears a dome
To make therein its lifelong home."

[1] According to Quetelet (l.c., I, pp. 299 ff.), the figure for the viability of a child of one-half year is 8; of one year, 9; of two years, 13; of three years, 17; of four years, 37; of five years, 48; of six years, 67; of seven years, 93; of eight years, 100; of ten years, 131; of fourteen years, 161; of fifteen years, 155; of twenty years, 100; of twenty-three years, 85; etc.

The growth in mental power permits the teacher to make heavier demands on the pupil, and he should evoke all the powers and faculties of his boys. At this point we note the steepest ascent of the path of education. Up to this period education consisted chiefly in absorbing knowledge; but now this knowledge must be penetrated and elaborated. The language instruction has advanced to literature; the reading of the classics is added to the study of grammar; and the interpretation of the form and subject-matter of what is read evokes varied activities. Mathematics is begun, whilst arithmetic and form study are superseded by the hypothesis, thesis, construction, and proof. The map continues to be used, but the historical chart is added. In history it is not only the great deeds, but especially the interrelation of the events that must be understood and committed to memory. The increase in intensive study necessitates a corresponding decrease in the variety of what is taught. It is well (provided that our suggestions relative to the division of the educational content are carried out) that the historical element be now stressed in several branches. Besides the historical instruction, we have the reading of epics and historians and the historical religious instruction. The memory and the imagination have thus to deal with somewhat homogeneous materials, and the understanding can concentrate its strength on mathematics. Direct interest is less strong than in the previous years, and favorite occupations and hobbies are no longer in the foreground. The indirect interests, rightly conceived and controlled, must now be made to co-operate. But the teacher should take care lest spontaneous interest die out altogether. He should, therefore, moderate his demands so as to allow the pupils some opportunity for following their native bent. In a word, the studies should be neither so intensive nor so extensive as to exclude free home reading, family life, and healthful recreation.

4. Puberty and the attendant physical changes mark the passing of the boy into the youth. Psychologically the change is marked by the different attitude of the boy towards men. Herbart says, "Boyhood lasts as long as the boy looks upon adults as strangers of no more importance to him than foreign nations and distant times. But as soon as he firmly grasps the idea that he is growing up in the present and allows this idea to influence him, then the time of boyhood ceases."[1] The youth

[1] Herbart's *Letters and Lectures on Education*, transl. by H. M. and E. Felkin, London, 1898, p. 219.

begins to feel at home in the world of adults; he shares their interests, makes plans for the future, and decides upon his life principles. While his interest in the present increases, his interest in the past decreases. In keeping with this new mental attitude, he drops history and takes up modern literature and the natural sciences. The school must continue that work of penetrating and elaborating which characterized the preceding period, and may, to some extent, proceed even to the application of knowledge. The knowledge of antiquity is to be applied to modern literature; the linguistic knowledge, to exercises in style; mathematics, to natural philosophy; and the practice of the fine arts is now also in order. Higher educational aims must now be added to the interests which have hitherto been the motor forces of the educative process. The youth must be brought to realize that he is educating and ennobling himself and also assisting in the larger task of conserving the intellectual treasures of the race. The ideal elements which instruction has all along been offering to him, he must now recognize as such. Here is an opportunity for philosophical instruction, which should be paralleled by a systematic course in theology. The ancient philosophers should be read in the original. The mind's growing maturity demands more liberty in the selection of studies. The student feels a spontaneous interest, which is deeper and stronger than the spontaneous interest of the child, in certain branches, while for others he may feel aversion. It is unavoidable that these inclinations be checked because of the large field to be covered by a general cultural course, and consequently the intermediate form between school learning and studies, the school studies, which would correspond to this age period, can not receive sufficient attention.[1]

5. When the young man takes up higher and professional studies, his youth is over and the work of general education is also done. The student must now strive, on the one hand, to fit himself for his future profession and, on the other, to derive the greatest possible benefit from practical life. If his general education has been successful, then his professionl, life, and culture will amalgamate, and he will develop a harmonious and well-proportioned mind, such as we described in chapter IX, where we dealt with the educational ideal. In our ideal of an educated man, we found certain contrasts united and bound together, and we shall easily recognize in them the points that

[1] Cf. *infra*, ch. LXI, 2.

guided us in organizing the educative process. Many-sidedness and compactness, cosmopolitanism and patriotism, enlightenment and appreciation of the transcendental boons, and the distinction of the zones of ethical concentration (ch. XXXV)—all these are traceable to one and the same problem. The grading, too, of the school subjects was based on the principle of passing from the periphery of the circle to its centre, and this passing appeared principally as the progress from the lower theoretical functions to the higher. In order that the mind may have a fixed habitat whence it may range afar, we must consider carefully the stations which it touched in the course of its development. The succession of progressing and resting is a repetition of the succession of fullness and depth, of world-perception and self-expression.

The diagram on p. 202 is a summary of all that has been said on the subject of grading the content of education.

If we could present in a diagram the ethical concentration and the correlation of the school subjects, we should have a résumé of our inquiry into the organization of the content of education. The outcome of our inquiry is an organized educational content, but not a system of studies, nor a curriculum. We can not, however, outline a system of studies and draw up a curriculum without discussing the different forms of education, and without making use of such principles as presuppose the inquiry into the production and transmission of the intellectual treasures, all of which belongs to Part V, which deals with the system of education.

Age Periods:	Child's school period	Immature boyhood	Mature boyhood	Mature youth
Steps in Assimilating Knowledge:	Perception		Penetration	Application
Motive Forces:	Direct interest		Indirect interest	Higher educational aims
Work Done:	General Elements	Elements of studies	School learning	School studies
Basic disciplines:	Elementary religious instruction		Historico-theological instruction	Systematic-theological instruction
	Biblical antiquity		Classical antiquity	
	Antiquity of pupil's fatherland		Modern literatures	
	Legends, songs, etc.	Heroic tales and legends	Epics, historical writings	Lyrics, dramas orations, philosophical writings
	Linguistic instruction		Language and literature studies	
	Mother-tongue alone	Elements of foreign languages	Foreign languages and literatures	
	Arithmetic	Arithmetic and form study	Mathematics	Philosophy
Accessory disciplines:	Geography and natural history: home geography and general geography		History	Natural philosophy
Arts:		Technical Training		Practice

II

PRINCIPLES OF DIDACTIC FORMATION AND TECHNIQUE

CHAPTER XL

The Psychological Factor in the Assimilation of Knowledge: The Stages of the Assimilation—The Formal Steps

1. Didactic formation is here understood to imply the adapting, or the shaping of a school subject as a whole in conformity, not only with the principles which we laid down for the organization of the educational content, but also with the special educational value of the respective branch as well as with the general principles obtaining in learning and teaching. Consequently, the didactic formation is, in one respect, only a continuing of the organization of the educational content, for its chief aim is to apply to a special matter the general principles of this organization, *viz.*, the principles of ethical concentration, of correlation, and of the grading of branches. The mere recognition of these norms does not suffice for a truly organized form of instruction; instead, they must be carried out down to the smallest detail. But the application of these norms is limited, on the one hand, by the peculiar nature of some subjects and, on the other, by more general conditions. In so far as the special educational value of a subject determines its didactic formation, a full treatment of the didactic formation would necessitate a detailed review of the contents of chapters XV-XXXIII. But to do so would go beyond the scope of the present work, and hence we shall here confine ourselves to laying down such general principles as can be derived from the nature of the educative process. In this way we can characterize, at least in general, the didactic formation of the individual subjects.

The didactic formation is also related to the didactic technique, *i.e.*, the method of teaching adopted by the instructor in the classroom.[1] However, before treating this relationship, we must examine the psychological and logical concepts that form the bases of the rules which govern the assimilation of the

[1] *Supra*, ch. XXXIV, 4.

subject-matter of teaching as well as the process of bringing out its educative content.

Our first step consists in examining those stages in the assimilation of knowledge which have an important bearing on the didactic formation. The next step is to analyze, synthesize, and co-ordinate the subject-matter so that it can be assimilated by the pupil. Finally, this subject-matter is, considered in itself, a whole; but, considered in relation to the pupil's circle of thought and interest, it is only a part, and being a part it must be connected with the other parts. This correlation of the materials of instruction forms the subject of our third series of general principles. The first of these three problems is based on the subjective element of the educative process,[1] and must be solved with the aid of psychology. The second problem is based on the objective content, and is solved with the aid of logic, which is the science of the thought-content. But in co-ordinating an intellectual content on a large scale, the investigator must invoke the aid of æsthetics and of the theory of learning. The third problem must take both the subjective and the objective factors into consideration, and is solved with the aid of psychology and logic.

2. When analyzing the complex psychical process involved in the assimilation of an intellectual content, we discover in the first place two factors: the perception of the content, during which the subject is receptive, and the action of the subject, which consists in elaborating, applying, executing, or practicing something. On acquiring a content of knowledge the perception is the more important; but in acquiring skill the action of the subject is the more important. Still, whether knowledge or skill be acquired, there is always a perception, an increase in knowledge. Many current expressions bring out the contrast between knowledge and skill, as, learn and practice, receive and produce, teach and train, know and do, know and practice, teacher and master, etc. The ancients also distinguished exegetical or explanatory grammar from technical grammar, which latter teaches the art of language. As means for cultivating the mind (*subactio ingenii*) Cicero mentions:[2] *auditio*, *lectio* and *usus*, *litteræ* (*i.e.*, writing). And the Humanists, too, paired such terms as *cognitio* and *usus*, *ingenium* and *judicium*, *contemplatio* and *efficientia*.

It is obvious that this distinction is co-extensive with several disjunctions that we have made use of elsewhere in the present

[1] *Supra*, ch. X.

[2] Cicero, *de or.*, II, 30, 131.

work; for instance, the familiar contrasts, theoretical and practical, desire for knowledge and expression, science and art, orientation and instrumentation, world-perception and self-expression.

Between the perception and the application of a content of knowledge, there is, first of all, the retention of it. This retention is not implied in the perception, though it must precede the application. Let the one term reception signify both the perception and the retention of the content, and we shall note that a second intermediate stage must precede the application, namely, the penetration or the comprehension, which is at once both a grasping and an application of the matter presented. These three terms, receiving, penetrating, and applying, are named after such actions of the hand as may aptly designate this series of psychic acts[1]. Only by penetrating what it has received, does the mind prepare the material for external expression. We can express properly only those impressions which we have understood.

Thus we have in the process of assimilating an intellectual content a series of three stages, *viz.*, reception (combining perception and retention), understanding and application (or execution); or, knowledge, comprehension, skill. The teacher must assist the pupil in all three stages." On the first step he will present the object to the external senses, or if that be impossible or unnecessary, to the internal sensuous faculties, by describing, narrating, or reminding, and thus assist the pupil in reviving impressions already received. On the second step he explains the essence and the elements of the idea, perfects it by relating it to existing ones, brings out the differences between them, and by reasons and arguments, unites them into higher logical units. On the third step he fixes the knowledge gained, *i.e.*, he offers opportunities for practicing and applying the new or enlarged knowledge, either by giving school exercises, or by pointing out the opportunities which will offer themselves for using the new or enlarged knowledge in daily life."[2]

3. This sequence of stages lies in the nature of learning and teaching, and so we are not surprised to find it in the didactic sayings and school proverbs of different periods. The ancient rhetoricians instructed their pupils to begin with the invention (*inventio*) of thought, then to proceed to the meditation (*meditatio*) on the material found, and only after that to take up its

[1] Aristotle, *de an.*, III, 8.

[2] Lambert Nolle, O.S.B., *The Formal Steps in Religious Education*, in *The Catholic Educational Review*, VII, 7.

development, arrangement (*dispositio*), and expression (*elocutio*) —a plan which unmistakably recalls our sequence of stages. In the work, *De disciplina scholarium*, which, though attributed to Boethius, was written in the 13th century, we find these three stages: to learn, to comprehend what has been learned, and to express what has been comprehended. Elsewhere in the same work, we read: "It is the duty of the beginner to listen and to attend to what is said. He who is more advanced should meditate on what he has heard, and after becoming skilled in meditation, to apply himself persistently to his studies. He who has reached the highest point of knowledge, may teach."[1]

In the old school saying,

> "*Multa rogare, rogata tenere, retenta docere*:
> *Hæc tria discipulum faciunt superare magistrum*,"

the retention is mentioned as a middle stage; but to be qualified for teaching, one must comprehend what is retained in the memory.

In the stages of the mental development of the young we found an analogous series, namely, perception, intellectual penetration, application.[2] We have another similar series in Herbart's division of interest into empirical, speculative, and æsthetical;[3] for a technical element (expression, reproduction, presentation) belongs to æsthetical education.

But science, art, and life also show the same disjunction. Every science has an empirical element, and also demands that its subject-matter be fully comprehended by the mind and expressed in the proper technical terms. This necessitates the acquisition of knowledge, thinking, and a command of the proper terms. Here as well as in the division of the sciences into empirical, rational, and applied, the three factors appear as the empirical, the logical, and the technical, *i.e.*, technical in the broader sense of applied. Again, the artist must, like the writer, first find his material, then comprehend it fully, and finally give it artistic expression. In life, experience gives insight, and this imports special skill in dealing with men and

[1] Both passages are quoted in Vincentius, *de erud., fil. reg.*, 7 and 10. Plato describes the teacher's reproduction of what he has learned as the choicest fruit of knowledge (I. *Alc.*, p. 118), and Aristotle describes it as the test of knowledge (*Met.*, I, 1, 18).

[2] *Supra*, ch. XXXIX, 5.

[3] Ch. XI, 1. Aristotle recognized the three kinds of interest; cf. *Met.*, II, 3, where he speaks of pupils who prefer the teaching through examples, of others who prefer scientific exactness, and of such as enjoy to hear the poets quoted in proof of a statement.

things. All the world appreciates the open eye, the shrewd mind, and practical skill as the three factors that ensure a successful career. Scripture says, "A man that hath much experience, shall talk of many things; and he that hath learned many things, shall show forth understanding."[1]

4. Our disjunction is found in so many variants for the reason that it is based on psychological grounds. The reception takes place either by perceiving with the external senses (when an object is actually shown) or by reviving the picture of it as existing in the imagination (when the object is presented to the internal sensuous faculties). The retention is accomplished by means of the insertion in the circle of presentations (*Vorstellungen*). These are acts of sensuous cognition. But the comprehending is superior to them, for it is an act of rational cognition. The reproducing, presenting, and applying are practical functions and acts of the appetitive faculty.[2]

Here we have the triad of Aristotle: *viz.*, sensuous, spiritual, and appetitive faculties. Aristotle says of them that they are the factors responsible for our actions as well as for our perception of the truth.[3] In the older psychology they return in a different form. The Schoolmen speak of *sensibilitas*, *ratio*, and *appetitus;* and Augustine speaks of memory, intellect, and will. "If we accept the word *memory* as the receptacle of the material impressions and pictures from outside, and the word *will* as including the higher and the lower appetite, we may say that the results of the three steps (in the assimilation of knowledge) are to be found respectively in the memory, intellect, and will."[4]

But when Herbart declared the differences between the sensuous and the spiritual and between cognitive and appetitive acts to be but secondary and then traced all psychical activities to the presenting alone, he had to assume also other stages in the assimilation of knowledge. Our stages, however, can still be recognized in Herbart's writings, so long as he does not drift away from common opinion and the practice of the schools. But they are obscured in the terminology with which he would force them into his system. Among his earlier notes on pedagogy are two rules concerning the clearness and connection of ideas, *i.e.*, the stage of reception. A third rule demands, for the sake of "intelligibility and comprehensibility," "that each

[1] Ecclus., XXXIV, 9.

[2] *Supra*, ch. XII, 2.

[3] *Eth. Nic.*, VI, 2: τρία δ' ἐστὶν ἐν τῇ ψυχῇ τὰ κύρια πράξεως καὶ ἀληθείας, αἴσθησις, νοῦς, ὄρεξις.

[4] Nolle, l. c., p. 6.

idea be placed in its proper position among the rest;" and Herbart adds, "this rule will facilitate the intelligent use of our ideas, so that we can with little difficulty survey the essential relations and the necessary effects of every thought." This remark shows that the rule suits our stage of comprehension and thinking. Herbart bases a fourth rule on man's need "to direct his ideas intentionally to appointed ends."[1] This last rule describes the stage of execution or application. In his *Outlines of Educational Doctrine*[2] Herbart mentions the following as functions of instruction: to see that a multitude of facts are apprehended, to explain or analyze this multitude of facts, to lift into prominence the cardinal thought, the methodical independent thinking of the pupil, and the application of the thought. Elsewhere he describes attention, comprehension, and memorization as the three factors of learning.[3] The technical terms, however, that he uses for his four stages are clearness, association, system, and method. But these terms do not properly express the things signified, for they commingle logical and psychological concepts, while the stages in the assimilation of knowledge are exclusively psychological. Association really belongs to application. System, which implies the ordering of many facts, does not adequately express the stage of comprehension and thinking. Method, considered as an equivalent of application, demands too much of the pupil, since even the teacher finds his ingenuity taxed when attempting a definite method. Because of the character of his psychology and science of education, Herbart has in mind an unconnected mass which the instruction must first form. His stages may be applied, perhaps, to the objects of natural history, but can not be used when dealing with sequences of thought, for instance, the explanation of texts, arguments, etc.

Ziller called Herbart's stages—clearness, association, system, method—formal (essential) steps of instruction, and used them to govern the methods of teaching, or what we call didactic technique. He also increased their number by prefixing to them the analytical preparation, *viz.*, connecting the new matter with the pupil's circle of thought—a subject that we shall deal with in ch. XLVI. Ziller likewise established a closer connection between association and system, by assigning to the former the work of abstraction, *i.e.*, the preparation of the image presented

[1] *Pädagogische Schriften*, ed. by Willmann, I, p. 379, note.
[2] *Outlines of Educational Doctrine*, § § 67 ff., pp. 52 ff.
[3] *Ibid.*, § 117, p. 118.

by the senses for its transformation into a spiritual object.[1] The Herbartian school has given particular attention to the formal steps.[2] Yet these steps could not, because they are based on an unconnected matter, be successfully applied to all subjects. Still, the experiments of practical schoolmen have fortunately corrected some of the errors of the original conception. Dorpfeld recognizes only three steps: sense-perception, thinking, application; he changed the first and fourth stages of Herbart respectively to sense-perception and application, and combined Herbart's second and fourth stages under the one of thinking.[3] C. Kehr's formal steps are reception, apperception, and reproduction; and he describes the analogous series of sense-perception, cognition, and practice as the "pillars of instruction."[4] O. Frick calls the series of presentation, elaboration, and application the "universal forms of instruction."[5] These terms have little flavor of pedagogical theory, but they designate, in point of fact, the beams upon which must rest the structure of the material of teaching—as a whole as well as in its parts —and therefore both didactic formation and technique must be based on them.

5. Each of our three stages includes a plurality of factors, and to each of these a special form of instruction corresponds.

The reception will differ in accordance with the medium required for perceiving what is to be learned. An object can either be perceived with the external senses, namely, through sense-perception, or it must be presented to the internal sensuous faculties by reviving former sense-impressions of it.

In the first case the teacher must show the object, and in the second he must present it. It should be noted that presenting is here used in its primary meaning; for in the broader acceptance of the term, presenting is almost equivalent to teaching as such.[6] The primary meaning of teaching (*enseigner*) is to show; and the connection between teaching and showing is based, most probably, on private tutoring and on the master's

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[1] *Vorlesungen über allgemeine Pädagogik*, § 24.

[2] De Garmo, *Essentials of Method;* Lange, *Apperception*, pp. 200-245; McMurray, C. A. and F. M., *The Method of Recitation.* A comparative view of the treatment of the steps of instruction by various authors is found in Van Liew's translation of Rein's *Outlines of Pedagogy*, pp. 145 ff.

[3] *Der didaktische Materialismus*, 2nd. ed., 1886, pp. 119 ff.

[4] *Theoretische und praktische Anweisung zur Behandlung deutscher Lesestücke*, 8th ed., pp. 45, 82.

[5] *Lehrproben und Lehrgänge*, Heft 16, pp. 34 ff.

[6] *Supra*, ch. XXXIV, 2.

instruction of his apprentice, for in both instances there is much showing and naming—and in the workshop also handling—of different articles and things. In the primitive forms of school instruction the sensuous element and the showing are, to a great extent, neglected, and didacticians had to stress the need and value of sense-perception.

To present empirical materials, the teacher either describes (in the case of an object or a scene) or narrates (in case he deals with the particulars of an event). Here the instruction approaches nearest to the art of language, and the teacher should, therefore, learn of the poet, historian, and orator. The presenting and the showing are frequently united, in as far as the presentation must be aided by the sense-perception, and the showing, by the imagination.

The comprehension is either nominal or real. The nominal deals with the thought embodied in words; it is philological because it consists in grasping what another has expressed. The real comprehension, however, strives to understand an object in its own nature and so attain to true knowledge.[1] The teacher who can make his pupils comprehend a thing, is doing what Aristotle has described as the function of the definition: to show either what a thing is or what its name signifies.[2] We shall use the term explanation for the form of instruction that deals with bringing out the meaning of language. It is the oldest form of school teaching, and is found among all peoples possessing the forms of higher education. The many terms connoting the work of explanation—exegesis, exegetical grammar, hermeneutics, exposition, commentary, glossary, annotation, etc.—demonstrate the extensive use of this form of instruction. If the explanation meet no linguistic difficulties and need, therefore, adhere less closely to the text, it may be replaced by the discussion. There is much simliarity between explaining a text and showing an object. When showing an object, the teacher explains what is seen, and when explaining a text, he shows what is contained therein. To paraphrase a thought embodied in words is the most common form of explanation, and the most important. But an explanation is needed wherever a thought is expressed by, or contained in, any symbol whatsoever. Symbolics and æsthetics must both explain; in their case the explanation is extended to other ele-

[1] Ch. XI, 4 and ch. XXXVII, 1.

[2] *An post.*, II, 7, ὁ ὁριζόμενος δείκνυσιν ἢ τί ἐστιν, ἢ τί σημαίνει τοὔνομα.

ments of presentation, and the explaining and the showing approach each other still more.

The comprehension of a text presupposes that the pupil first separates and then unites the language elements, that he realizes the coherence of these elements and grasps the thought content which unites into a whole the parts of the linguistic expression.[1] But the language elements as well as the thought content are at the same time the subject of a further explanation: the language elements can be understood in the light of the categories and rules of grammar; but the thought content is intelligible only in the light of its relationship to higher and causative thought contents. In both cases the comprehension offers not, as before, elements of presentation ("*Darstellungselemente*") but elements of knowledge ("*Erkenntniselemente*"). Here we understand the specific in the light of the generic, and what is derived, in the light of its source. Thus we attain true knowledge; because the generic and the source reveal the nature of a thing; they are its principles: "to know what a thing is, is to know why it is."[2] The principle contains, as it were, in a germ the individual and the specific, and the teacher must show the process of development, must show how the individual and the specific grow from the principle. Still the principle may, on the other hand, be said to be contained in the individual and the specific, and it can, therefore, be evolved from a number of individual and specific instances.

The comprehension becomes real when it enters into this relationship. To arrive at this real comprehension, the teacher must develop logically and coherently the unknown from what is known, whether it be the generic or the specific. This form of instruction may consequently be called developmental instruction. The development of a subject is analogous to its presentation, with this difference, however, that the former does not recognize, as does the presentation, the parallel or the successive, but deals with the relations of thought contents. Just as the presentation may end with showing the pupil a concrete object, so the development may often conclude with a striking text. This is well illustrated by Trendelenburg, in his *Erläuterungen zu den Elementen der aristotelischen Logik*, for this work consists of summaries of logical developments given in quotations from Aristotle.

[1] Ch. XVII, 3.

[2] *An. post.*, II, 2: τὸ τί ἐστιν εἰδέναι ταὐτό ἐστι καὶ διὰ τί ἐστιν.

6. The proper assimilation of knowledge implies, not only an act of the understanding, but an act also of the emotional soul. Only those elements of knowledge in which the pupil is vitally interested and which he likes, are properly received by his mind: *amor docet artes*.[1] A truth, to be properly comprehended, must be not only obvious to the mind, but also a joy to the heart. Truth delights us; it is not only thought, but also felt.[2] What another offers us is made our intellectual possession as soon as our feelings respond to it; and that knowledge which corresponds with our personal likes, is assimilated most readily; or, as Shakespeare puts it,

> "No profit grows where is no pleasure ta'en:
> In brief, sir, study what you must affect."[3]

Though this evoking of our feelings is an activity, the actual doing stimulates still more the reception and comprehension. We receive with more intensity the truth that we have sought after, than that which has been placed within our reach before we felt a desire for it. Again, to apply a truth is the best way to bring it home to us. The application of any doctrine is the key to its comprehension. "If any man," says Christ, "will do the will of the Father, he shall know of the doctrine whether it be of God."[4] Practical experience gives an understanding of things, as Goethe assures us:

> "Many the things we do do not know;
> Go right on—'twill work out so."

The stages of reception and application are thus interrelated with each other. Instruction, however, can undertake to apply a truth only after it has been comprehended.

If we would apply the knowledge that has been received and comprehended, we must first fix it in the mind. A content of knowledge is fixed in the mind by memorizing, while a matter of skill is fixed by practice. It is naïve to conceive of memorizing as representing the work of learning as such. The Roman term for memorizing, *ediscere*, implies thorough learning, to exhaust a subject, as it were, by learning all that is embodied in it. The English term, to learn by heart, as well as the French, *apprendre par cœur*, connote the full attention that is required for memorizing. The Greek expression, ἀπὸ στόματος μανθάνειν describes, so to say, the lip learning. The opposite of the German word, *Auswendiglernen*, would be the *Inwendiglernen*, that

[1] Cf. *infra*, ch. XLVII, 1.
[2] *Supra*, ch. XI, 6.
[3] *The Taming of the Shrew*, I, 1.
[4] John, VII, 17.

study of a subject which does not regard its external form. There are several old school proverbs that have reference to memorizing and practice: "*Tantum scimus, quantum memoria tenemus;*" "*Repetitio est mater studiorum;*" "*Lege, relege, repete;*" "*Nulla dies sine linea;*" "*Præcepta pauca, exercitatio multa.*" We have elsewhere quoted proverbs to the effect that learning must culminate in practice and, especially, in teaching. The same truth is expressed in the following proverbs: "*Fabricando fabricamur,*" or in another version, "*Fabricando fit faber;*"[1] "*Docendo discimus.*"[2] "*Non scholæ, sed vitæ discendum,*" refers to the application in life, but it is generally understood in a sense that is foreign to its original meaning.[3]

The materials which have been received into the mind, but are not yet comprehended by it, we shall call, with Kant, *judicious*. Even such materials can be fixed in the mind—and, within certain limits, to advantage—but this fixing is purely mechanical. As there is a practice with subsequent meditation, and as there is an art that precedes science, so there is also a fixing of such contents as will only later become thought materials.

The most common form of study employed in the school for applying what has been learned, is the exercise. The exercise will best meet its purpose if the pupil has mastered all that it presupposes and if it forces him, at the same time, to work independently of the teacher and the text-book. The question is so much like the exercise that it may be described as an abridged exercise, while the exercise may be called a fully worked out question. The question, however, is not only a form of applicatory instruction, but is the general medium for the intercourse between teacher and taught, and may consequently be employed in every form of instruction.

7. The various stages in assimilating knowledge determine the forms of instruction.

The stages of assimilation and the corresponding forms of instruction may be applied, because of their general character, to all materials of teaching, but the manner and the extent of

[1] The saying can be traced to Aristotle's *Ethica Nic.*, II, 1, where he shows that skill is to be acquired through practice, adducing music and architecture as examples. The version "Fabricando fabricamur" expresses even more the inner formation which is obtained through forming something external. The Latin "industria" (*Indu-* and *struere*) is to be understood in the same sense: an inner building that imparts skill.

[2] The proverb can be traced to Seneca, *Epist.*, 7, 7, "*Homines dum docent, discunt.*"

[3] Vol. I, ch. XIII, 1.

FACTORS BELONGING TO THE ASSIMILATION OF KNOWLEDGE AND TO THE FORMS OF INSTRUCTION

EMPIRICAL ELEMENT: RECEPTION		RATIONAL ELEMENT: COMPREHENSION		TECHNICAL ELEMENT: EXECUTION, APPLICATION	
of an object perceived with the senses, prerequiring	on the ground of reproduced sense-perceptions, prerequiring	nominal, pre-requiring	real, pre-requiring	with materials of indirect application, prepared by	with materials of direct application, prepared by
Showing	*Presentation*	*Explanation*	*Development*	*Fixing in the mind*	*Practice*
1. Exhibiting, 2. Showing how something is to be done.	1. Description, 2. Narration.	1. Exegesis, 2. Discussion.		1. judicious, a) by exercises,	2. mechanical, b) by questions.

this application differ with each discipline. The empirical element predominates in history, geography, and the natural sciences. Historical instruction is chiefly presentative, while in geography and the natural sciences the material is not only presented, but often also shown. Empirical and rational elements are combined in theology; and theological instruction is partly explanatory, partly presentative, and partly developmental. Empirical and technical elements are united in philology. When dealing with exegesis philological instruction is explanatory; when dealing with the art of language it is technical; and when dealing with grammar it may be developmental. The developmental form is peculiar to philosophy. But it is much used in mathematics also, where, however, it must be supplemented by the technical form, *i.e.*, problems and exercises. The technical element predominates in the arts. In teaching music and graphics there must be both exercises and explanations; while gymnastics is taught by first showing the pupils how to do a thing and then letting them do it by themselves.

These elements may easily be connected in most branches, and the materials of instruction will thus acquire a homogenous character. But in some branches it will require special care to correlate the different phases of instruction. Thus in philology it is difficult to correlate the reading of authors, the teaching of grammar, and the language exercises. Geography, too, offers peculiar difficulties in that the map must be correlated to descriptions and narrations. Similar difficulties are found in the natural sciences, where the objects should be exhibited and, if possible, handled by the pupils. These disciplines, which we may describe as mixed, offer special problems for didactic formation and technique.

CHAPTER XLI

The Logical Factor in the Assimilation of Knowledge

Analysis and Synthesis

1. While tracing, in the preceding chapter, the process of intellectual assimilation we presupposed that a certain content is assimilated, but we did not examine this content. But we must now examine it, for the study of the content will disclose factors that are just as important for the didactic formation and technique as are the factors that belong to the assimilation of knowledge.

All content of learning is partly simple and partly compound. A simple content is assimilated by a relatively simple act of the mind; but while assimilating or at least after being assimilated, it is connected with other contents. A compound content, however, is divided into certain elements, which are assimilated singly, but are ultimately reunited into a unit. As the process of assimilation has three stages, reception, comprehension, and presentation, we must examine the content also from the viewpoint of each of these stages, and then also from the viewpoint of being first resolved into its elements (analysis) and later compounded of them.

An erroneous conception of the stages in assimilating knowledge can not fail to reflect upon the inquiry into the analysis and synthesis of the content. Nominalism, which denies that a real difference exists between reception and comprehension, between the idea and thinking, does not get beyond the reception and is content with the analysis and synthesis of ideas. If the difference at least between reception and comprehension is acknowledged, while only the second stage is ignored, there is danger lest the reception be equalized to the analysis and the presentation equalized to the synthesis. The problem can not be solved unless the thinking and mental comprehension is allowed a middle position, and is recognized both as the pivotal point on which the receptive and spontaneous element turns and as the element which forms the spiritual content. Besides, it is this position alone that will ensure the contact between logic and the science of education, and without this contact the science of education would be treated from a one-sided psychological point of view. Only of logic can the science of education borrow the technical terms for the separation and combination described above, *viz.*, analysis and synthesis. The improper use of these two terms in pedagogy has frequently been the cause of unclear and hazy notions.[1]

2. "The resolution of any compound into its constituent parts is called analysis. Synthesis is the process that goes from the principles to that which has sprung from them, but analysis is the return to the principles from the other end."[2] This is the explanation that the Aristotelians give of these two terms, and logic has followed their usage. In analysis the mind passes from the concrete, the specific, and the conditioned to the

[1] Cf. *infra*, ch. LVI, 3.

[2] Alexander of Aphrodisias in his commentary on the Analyt. pr.

abstract, the generic, and conditioning. But in synthesis it passes down from higher concepts, general rules and laws to that which is compassed by these.

Plato was the first to distinguish these two mental operations, and he illustrated them by a happy comparison. Aristotle says in his praise, "It is well that Plato raised the question, whether one should set out from the principles or take the opposite course and proceed in the direction toward the principles, just as the contestants in the race start out from the stand of the judges and return to the same place."[1] Plato's comparison does actually not suggest that one should use either of the two methods, but that one should use both, one as well as the other. Aristotle likewise taught that the two methods should be combined. The comparison suggests other points besides: the starting-point of the contestants is observation and experience, which gives us a knowledge of things; the turning-point in the middle of the course is the thought-content to be acquired by analysis; the homeward stretch is the elaboration of this content by the applying, correlating, and specializing synthesis; the end of the course is the experience now raised to knowledge —the knowledge-content comprehended and assimilated through thinking.

The terms analysis and synthesis are borrowed from mathematics and do not adequately express the logical relations implied. In order to get at the thought-content there is less need of resolving than of evolving and extracting, and in the process of applying this thought-content there is more need of adding certain modifications than of combining them. Explication, *i.e.*, literally an unfolding, and application, in its literal sense of affixing, would be more suitable terms.

In the case of concepts, analysis abstracts: it places indefinitely the properties which the higher concept retains as such.[2] In the case of judgments, it generalizes by discriminating from specific limitations. It employs the inductive method when establishing laws on the ground of the material obtained by comparing many individual facts and occurrences; and when

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[1] *Eth. Nic.*, I, 2.

[2] The properties are not omitted; the generic concept retains the structure of the specific and is therefore not at all made void; it expects to be filled, just like a chart whose different columns are to be filled. "Abstraction represents analysis carried to the point where some aspect of relation incapable of separate existence is discriminated from its actual context so that mentally at least it seems to have separate existence." John Dewey in *Cyclopedia of Education*, s.v. *Analysis and Synthesis.*

tracing causal relations it employs the regressive method, as it also does when inquiring into the grounds of judgments, theses, and rules.

Synthesis, however, determines concepts exactly by placing definitely the indefinite properties. In the case of judgments, it specializes by adding definite characteristics which narrow down the field to which the judgments apply. In the case of rules and laws, synthesis follows the deductive method, for here it leads one down to the circle of the application of the rules and laws. The chain of causes it follows progressively: from the causes to the effects, and similarly it proceeds from the premises to the conclusion.

3. In teaching and learning, analysis and synthesis in the logical sense are employed whenever real comprehension is the object in view. This is the case especially in developmental instruction, for here either the principle is developed analytically from the given, or the given is developed synthetically from its principle.

The real comprehension deals with elements of knowledge (*"Erkenntniselemente"*). But there is another kind of comprehension which is concerned with the elements of presentation (*"Darstellungselemente"*) and which, because these elements belong to the domain of language, can be called nominal or philological comprehension. We find also in this comprehension a resolving and a combining of elements, and here there is an ascent from the expression to the sense, from the symbol to the thought, from the medium of presentation to the intellectual content; but in applying the medium of presentation there is a descent in the opposite direction.

Just as the elements of knowledge are interlaced in the given, so the elements of presentation are interlaced in the expression, whether linguistic or artistic. And as the logical analysis of the given content leads to more generic concepts, and the synthesis, to more specific, so the explanation of a classic or of a work of art—which explanation may be called technical analysis—leads to elements of an enlarged circle of application, while the production of a classic or work of art combines those elements and thereby makes use of them for a specific application. The real comprehension seizes the essence in the given, and the nominal comprehension seizes the thought in the expression. The former is focussed on the basis of the thing; and the latter, on the sense embodied in the symbols, on the spirit that has made them

symbols. Even if the psychical activities of the two kinds of comprehension are different and demand a difference, too, in teaching methods, still they amount ultimately to what is practically one and the same thing: the realistic world-view, in opposition to the nominalistic, regards the thought as the essence, the spirit as the basis, the given real as the expression of the ideal, and the world as a text whose significance must be brought out.[1] The most intelligible middle term between the knowledge and the presentation is the end, which is, at one and the same time, thought and cause, the principle of knowledge and of presentation. The means employed for attaining the end are elements of presentation, but in so far as the end may be concluded from them, they are elements of knowledge. When studying that which is determined by the end, *i.e.*, the organic, we must combine the abstracting analysis with the explanatory, for the organic must be examined in the light of general principles as well as of the unity of the end. Hence a teleological analysis may not confine itself to a definition, but must undertake to explain, like exegesis, a meaningful whole.[2]

We are therefore justified in extending, in the science of education, the meaning of anlaysis and synthesis, so that these terms will cover, unlike what they embrace in logic, the elements not only of knowledge but also of presentation. The difference is brought out sufficiently by the contrast between the logical and the technical—technical analysis and synthesis being here understood to include also linguistic analysis and synthesis.

4. But the science of education must also extend the meaning of these terms in another direction, because with it the logical element is only a middle term and the thinking is placed between the reception and the application. In the synthesis we need not consider the stage of reception, because the synthesis is at one and the same time the medium of reception and of comprehension. But in the analysis the object to be analyzed must first be seized by the mind, and thus a synthesis must precede the reception. This holds as well for the didactic showing of a sensuous thing as for the analytical discussion of an intellectual object and for the explanation of a text. Only in one instance are presentation and reception not needed, *i.e.*, where the pupil's own ideas are the object of the analysis, for

[1] Cf. Trendelenburg, *Logische Untersuchungen*, II, p. 468.
[2] Cf. *supra*, ch. VIII, 1.

there the instruction proceeds along purely analytical lines without any previous synthetical work. It is in this sense that Herbart conceives analytical instruction, while extending synthetical instruction to include every method in which the teacher presents material—a point we shall have occasion to touch upon when we inquire into the correlation of the subject-matter of teaching with the pupil's mental content (ch. XLVI).

Analytical instruction must, however, also conclude with a synthesis. The general elements discovered by the analysis must be applied to the specific, because this very application is the test of comprehension. But all application is synthetical, for it descends to specific conditions. And so the analysis occupies in instruction a middle place between a synthesis of the reception and a synthesis of the application.

5. We shall now see how analysis and synthesis are related to the forms of instruction that are based on the stages in the assimilation of knowledge.[1] In the arts the showing is synthetical, for here the teacher must show by examples what is to be done by the pupil. It is likewise synthetical when the teacher lets the pupil witness the production of a sensuous thing. But when the teacher shows a finished product to the pupil, the instruction must proceed along analytical lines. Presentative instruction is chiefly synthetical, and analytical only when dealing either with an object placed before the pupil or with the pupil's circle of thought. Explanatory instruction is analytical, and developmental instruction may be analytical as well as synthetical. Fixing the knowledge in the mind, and practice and application are naturally synthetical.

If the object of inquiry be rich enough to afford different points of attack, we may combine analysis and synthesis. The analysis may precede to lead up to the viewpoint of observation, from which one may again descend by means of a synthesis. Plato frequently follows this procedure, and his *Republic* is a classical example of it. He first inquires into the nature of justice, and after having studied the matter analytically, he arrives at the conclusion that true justice must be sought at one and the same time in the community and in the life of the individual; and hence he proceeds to construct synthetically the ideal constitution for the community and the individual. Another way of combining analysis and synthesis is to let the presentation proceed on the whole synthetically, but not in a

[1] Cf. *supra*, ch. XL, 2.

continuous development, but so that there are steps of separate lessons of which each is analytically traced to its presuppositions. Euclid's *Elements* are the oldest example of this style of treatment. They begin with the simplest definitions, but do not develop in a simple synthetical way the conclusions to be derived therefrom, but develop them artistically through theorems and problems to which are added the proofs and solutions, and these proofs and solutions show the connection with what has been previously established.[1] The Schoolmen adopted a similar method when they divided their inquiry into *Quæstiones* and these into articles, which latter dealt with the pros and cons, and whose final outcome was traceable to the truths previously established.

6. In the history of instruction the synthetical method preceded the analytical. The synthetical method appealed to the older education because it attached greatest importance to exercise and practice, whose nature is synthetical. A further reason for preferring the synthetical method lay in the need of reducing the elements of learning to the smallest possible compass, which is best done by adopting the synthetical method, for this proceeds from the principle and leads down to what is deduced from it. The liberal arts were generally taught synthetically, and the analytical method was used only for explaining texts. Descartes described the synthetical method to be that of didactic presentation, the analytical, however, as proper to the inventor.[2] The Didacticians of the 17th century were the first to advocate analysis, though they did not employ the term. It is no other method than the analytical that is commended in these precepts of theirs: "*Ne modus rei tractetur ante rem;*" "*Universalia docentur in singularibus, totum in particularibus;*" "*Per inductionem et experimentum omnia.*"[3] Comenius agrees with them in recognizing the importance of proceeding analytically from the thing, from the individual, the sensuous. But he appreciates the synthesis also, which he saw exemplified on all sides in nature, for nature first shapes the general outlines of things and then proceeds to deal with the single parts. In the same way, so he contends, should the foundation of education be laid, so that the course of study need only bring out its

[1] For further details see *infra*, ch. XLIV.

[2] *Discours de la méthode*, II.

[3] The last principle quoted is Ratke's, the others are Helwig's as laid down in his *Delineatio didactica generalis* (Raumer, *Geschichte der Pädagogik*, II, pp. 395 ff.).

various phases and parts, just as in the tree only the first twigs are developed into branches.[1] Comenius, however, fails to treat in detail the relationship between analysis and synthesis, and his synthesis is, in fact, application and presentation.

There were several reasons which recommended the application of the analytical principle to the educationists of the 18th century. First, they welcomed the principle as one full of promise for lightening the work of learning. Secondly, there was a natural kinship between the sensualism of the age and a method of teaching that requires sensuous presentation. And, lastly, the fondness of the age for argument and reasoning encouraged the analytical method. Hence the pedagogy of the Enlightenment extolled the method that proceeds from the given, as the only natural method in contrast to the rigid forms of the synthesis, which latter, as was alleged, burdens the mind with unassimilated matter. But Pestalozzi's art of teaching has a synthetical character. He aims at grounding elementary instruction on "the last elements," believing that the materials of instruction should be composed of the combination of these elements, so that eventually the whole content of elementary education will unfold itself in a natural way and will exclude all arbitrary methods of the teacher. Such a synthesis, however, it must be confessed, is possible only with the elements of presentation, and even here only to a limited degree.[2]

The wise teacher will appreciate the value of both methods, will strive to combine one with the other, and will do well in following herein the lessons taught by logic. Logic teaches that analysis and synthesis must be combined in research work. The function of analysis is to obtain from the empirical material concepts and laws, while synthesis draws conclusions from principles, and these conclusions are related to the generalizations of analysis. Analysis offers the certain ground and a wide field for the experiments of research work, but synthesis brings out perspectives, and is the finest flower of scholarship. In the school, too, analysis establishes a sure basis for the work of instruction by raising the pupil upon the ground of his actual environment. The synthesis, however, whether it assume the form of deductive development or whether it give a well-organized and compact form to some subject-matter of study, must still be declared the glory of the art of teaching. The function and value of the two

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[1] *Didactica magna*, 16, 45; cf. 18, 28 and 18, 35; cf. *supra*, ch. XXXII, 1.

[2] Cf. *infra*, ch. L.

methods may be briefly stated thus: analysis, if necessary; synthesis, if possible.

7. Following the usage of logic, we may designate analysis and synthesis as methods. Method is a principle or system of procedure. We may explain it by comparing it with kindred principles: the maxim is a principle of acting; the style is a principle of formation; and the viewpoint is a principle of observation.

Universality is common to all these principles. Method is an ordinary mode of procedure. As little would we outline a method for one solitary instance as invent a style for one subject. Nor can there be a question of method if there be no choice in regard to one's mode of procedure; methodical procedure is one that is chosen with a view to obtaining the best results, but not one that is forced upon us by necessity. The method is selected in yet another sense, namely as opposed to what is done at random, or spontaneously, for such a practice is reconcilable with a mannerism but not with real method. The method differs also from the problem to which it is applied; there is a method of showing, of explaining, of developing, of practicing, but no deictic, exegetical, developing, or practicing method.

Method is a rule for doing something, and didactic method is the rule for teaching. But in following a method the teacher should not ignore the specific character of whatever he wishes to impart to his pupils; else the method will degenerate into routine work. The application of a method is a synthesis, and must consequently be governed by the conditions for specializing the general.[1] The cult of method ignores these conditions, and the consequent abuse may let one question the usefulness or even justifiability of any methods of teaching. Such a question, however, can arise only from abuses of methods; yet didactic empiricists are quick to answer it in the negative and to condemn all methods of teaching. They argue that the subject-matter of teaching, combined with the teacher's native gifts, will ensure correct teaching, a statement that ill accords with well-known facts and that is false also on logical grounds: for the neglect of logical methodology has never been known to go unpunished, and even philosophical empiricism is forced to employ it as an organon of speculation. The cult of method is born of thoughtlessness, and the horror of method is born of mental indolence.

[1] Willmann, *Logik*, Freiburg, ch. XVII, 3 and 4.

III

DIDACTIC FORMATION: COURSES OF STUDY

CHAPTER XLII

The Organico-Genetic Course of Study

1. The psychological elements in assimilating knowledge, *viz.*, reception, comprehension, and application, as well as the logical elements of the elaboration of the content of teaching, *i.e.*, analysis and synthesis, suggest a series of rules for the didactic formation of the material of instruction. For the purpose of the reception it is best to present the material in such units as correspond to the respective pupil's range of mental vision; *i.e.*, they should be small enough to be taken in at a glance, yet withal large enough to enkindle his interest. For the purpose of the comprehension the teacher should present the material in due order so that everything may, as far as possible, be clear in the light of what preceded, and that the relations of cause and effect, reason and conclusion, end and means, be recognized as the inner bond connecting the single materials. In this way the material of instruction will also be more readily fixed in the mind, for what is internally connected is remembered more easily than what is disjointed. However, there must also be established smaller groups and series, whose members will refer, through certain striking features, to one another as well as to different other materials. But the application calls for groups composed of such elements as admit in practice of diverse combinations. The analysis calls for units with well-defined limits of operation so that all foreign elements be barred. The synthesis, on the contrary, calls for such series as radiate from given points and branch out in different directions.

If we let these rules and others that may be derived from them, be the foundation upon which to arrange the subject-matter of teaching, we shall be preparing directly for actual teaching, *i.e.*, for the didactic technique; and the viewpoint of this arrangement can be called the didactico-technical one. This viewpoint must, indeed, be considered in the theory of didactic

technique, but we must first look at the subject from the viewpoint offered by the nature of the teaching content. To treat this content according to the rules outlined above, would savor of the formalism which regards the materials of instruction as a mere quarry (ch. X, 2) to be utilized to the greatest possible extent, and would also fail to co-ordinate the materials and to meet the demand that the didactic formation bring out the educative content of the school subjects.

The educative content of a subject consists, as we have proved elsewhere,[1] in those parts and elements of it that are responsible for its taking root and influencing the pupil's mind. Consequently the value of learning and practice depends essentially upon fixing these parts and elements in the mind. Hence the course of study must be so arranged as to provide light and air for these fertile elements and to infuse into the whole that life-giving spirit of the respective branch which should make the mind grow. We can not do this, however, unless we pay due regard to the structure peculiar to the material of instruction, which is organic, for the content of a branch is, as Plato says in his dialogue, a ζῶον. The science of education is akin to the art which Plato demands and which, as he says, "while it looks on a ground-form, directs to it what is scattered here and there," and also "divides the members according to their natural growth and not as does an unskilful cook who simply breaks a part."[2]

In this inquiry we shall receive no assistance from psychology, which furnished the elements in the assimilation of knowledge, nor from logic, which contributed the terms of analysis and synthesis. The systems with a nominalistic tendency do not reach even the borderland of this domain, for if the universal is held to be naught other than "an abbreviation for convenience' sake, without any meaning of its own,"[3] it is impossible to treat thought as a generating force and the development of its works as a genesis.

That world-view alone will assist us which claims not only a similarity, but even an inner relationship between the spiritual and the organic—which is the world-view held by Plato and Aristotle and revived by Trendelenburg under the name of the organic. The organic world-view maintains that all development proceeds from a whole—the seed and germ—and "while

[1] Ch. X, 4, p. 52.
[2] *Phædr.*, pp. 264, 265; cf. Aristotle, *Poet.*, c. 23.
[3] Herbart, *Metaphysik*, §329; *Werke*, herausg. von Hartenstein, Vol. IV, p. 321.

the power of the whole remains in supreme control, the parts develop into members which serve and reflect the whole." In the field of intellectual work there is the idea which, so long as it remains isolated, remains closed up, but once it is exposed to the mutual relationship incident upon connection with other ideas, it will "display the strength of its law in multitudinous forms of knowledge."[1]

An impetus to this view has come from the Hegelian school also. Though we do not accept the absolute idealism of the Hegelians, we acknowledge gratefully that their attempt to reinstate the ideal principles has deepened our studies of the subject: witness Karl Mager's brilliant book, *Die genetische Methode des Unterrichts*, Zürich, 1846. For want of a better foundation for our further inquiry, which could be supplied solely by what has not yet been forthcoming—a theory of science and art from the organic viewpoint—we must be content with utilizing what is at hand, and this will suffice at least for pointing out the right way.

2. The co-ordination of the materials of instruction must be more than didactico-technical: it must have the character of an organico-genetic formation. To obtain this character, it must, first, show in the whole, amid the diversity of its materials, the force of that generating principle which has produced the respective science or art, which controls its development, and which should, for this reason, be recognized in its transmission also. The co-ordination of the instruction materials must, secondly, bring out in its details those parts in which a whole appears as supreme and as reflected in the parts, and which permit a survey of an origin, growth, and development. Briefly, the school subjects will possess an organico-genetic character if the organic units and the genetic sequences are brought into view and made the centres of all the rest.

Since the terms organism and genesis are taken from nature, it is proper to turn first to nature to ascertain their significance. In the first place we must study the living beings themselves and, to a certain extent, their origin. But our inquiry must go beyond the individuals and examine into their connections with other beings, and thus we shall arrive at the life units, produced in nature partly independently of man and partly through his efforts and which culminate, for our present purpose, in the telluric life unit.

[1] Trendelenburg, *Logische Untersuchungen*, II, pp. 374, 375.

Even the life of the brutes reveals associations formed for the sake of self-preservation. But among men, these associations are raised to social organisms, of which the individual man is a member. Family and tribe, common life and community, peoples and states, mankind and the Church—these are the various associations which hold together organically, in larger and larger circles, the life of man and raise it to a historical life.

In the sphere of human activities it is the productions of art that reveal the greatest resemblance to the organic beings of nature. This should not surprise us, as art largely consists in imitating nature and in continuing and perfecting what the latter has begun. In a work of art, whether of poetry, music, painting, or sculpture, there is a ground motif, which unifies the mediums of expression and which is variously reflected in them. The subconscious development, in the mind, of such a work of art is analogous, in divers ways, to a plant's growth from its germ.

The matter assimilated by living beings is partly organic and partly inorganic. The elements, however, of the social organisms, *viz.*, the human individuals, are themselves organic units and are therefore themselves ends, so that they may never be treated purely as means to attain a social end.[1] The organisms of the fine arts occupy, in regard to their matter, a middle position between the natural and the social organisms. On the one hand, they elaborate inorganic matter, such as stone, marble, paints, and sounding bodies. But, on the other hand, they employ the spiritual, such as words and thoughts, numerical quantities and space forms, which are obviously more than materials. These spiritual elements are at all events systems of mediums: language is a system of mediums of thought used to express the inner world; numerical quantities and space forms are a system of mediums for elaborating the sensuous picture of the world; and concepts, finally, are a system of mediums for comprehending the given in general. But we must take a further step: these spiritual elements are not only systems but organisms.

After the truth that language is an organism had once been admitted, it should never have been questioned again. The phonetic system, the law of accentuation, the rules of syntax, the inflection, the word-formation, the root-material—all these have not been brought together at random to assume the definite forms that they have in any given language, but have developed

[1] Vol. I, Introduction, II, 9.

under mutual influences upon one another and under the continuous guidance of a principle that may well be compared to the ground motif of a work of art.[1] Thus we are accustomed to speak also of organic and inorganic formations, of rules holding for formations and constructions, and of the genius of a language as demanding certain turns of expression while only tolerating or even rejecting others. Every work of art is an organism, and language no less so. There is a mutual influence between language and art, and the two are, in this regard, on an equal footing. Language is, like the arts, rooted in the human soul and it is differentiated in the national spirit.

3. The organic view of language is ultimately based on the organic world-view, and the latter recognizes also the system of concepts as an organism. If all that has being owes its beginning, in the last place, to an idea, then all true organisms are but copies of an ideal protoörganism. Plato had such a protoörganism in mind in his views on the world of ideas, though he missed the idea of creation as being the regulator of all. Similarly, the concepts of quantities are not a mere arsenal for elaborating the sensuous world, but flow from the nature of quantity, number, and space. In this field, too, expressions borrowed from the organic world are not at all infrequent: we speak of a fruitful construction, the nerve of an argument, the evolution of quantity. And many of the laws that govern mathematical forms recall the analogy to the fine arts. The Pythagoreans spoke of a seed of number, and could rightly call the soul a number, because they regarded both the soul and number as a principle of construction.

Thus we have three kinds of organisms: the social, the artistic, and the intellectual; and these we can, in accordance with the disjunction that we have used elsewhere,[2] designate also as practical, formative, and theoretical.

The organisms develop from what was at first only a potentiality, and the study which follows up this development represents the genetic method. We have accepted the principle of the genetic method as worded by Aristotle, "The best method of studying a thing is to observe its development from the very beginning."[3] To follow up the genesis of a thing will greatly assist us in comprehending it. But there is likewise a genesis of the comprehension, which need not necessarily coincide with the genesis of the thing. If the objects of study are of a more

[1] *Supra*, ch. XVII, 7. [2] *Supra*, ch. XI, 3. [3] *Supra*, ch. XXXVIII, 1.

complex nature, the comprehension of them will pass through different stages, as may be seen from the history of the respective sciences. These successive stages should be brought out in the course of study, because the development of the respective science and the imparting of its present content are closely interrelated and, to a certain degree, even identical. This scientifico-genetic method should, therefore, also find a place beside the real-genetic study, though its application requires special caution.[1]

Wherever any potentiality assumes through a successive development a definite shape, and wherever the present state of the subject allows a view of its previous growth, the teacher should try to apply the organico-genetic method. There is no field of knowledge or of skill where such materials are not present, but they are everywhere intermixed with diverse other empirical and technical elements. Hence the course of study should be so arranged as to bring into the foreground the organico-genetic elements of the branches.

4. The natural organisms, the subject of natural history, constitute a treasure that should be utilized in the course of instruction. Schleiermacher insists that the teacher should not neglect what is "most noteworthy, namely, life"; and that he should therefore seek out the various forms of life, "for only that is true instruction which is based on that general conception of life with which the different modifications can be connected."[2] For studying life from the viewpoint of the formative aim, Aristotle's directions[3] are still the most useful; and Trendelenburg aptly compares them to Cuvier's fine sketch of the carnivorous animals.[4] Hence the inquiry will properly begin with the functioning organism, in order that each single organ may be understood in the light of its use. The analysis, which inquires into the details, is the second step; and the synthesis of the genetic study should, if possible, be the third step. This synthesis is possible with the lower animals and plants, at least in part, and, though it demands much time and persevering interest, it will amply reward all efforts expended. Aris-

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[1] Vol. I, Introduction, III, 7.

[2] *Erziehungslehre*, edited by Platz, 1849, p. 514, note.

[3] *De an.*, III, 12; *de part. an.*, I, 1 and 2, I ff.

[4] *Logische Untersuchungen*, II, pp. 8 ff.; Müller, *Physiologie*, 1835, I, p. 462 f. and 471 f.; Cuvier, *Discours préliminaire* for his *Recherches sur les ossements fossiles*, Paris, 1812, p. 58.

totle's words, quoted in ch. XXVIII, 1, breathe a reverent love for nature—a love that is the fruit of the sympathetic observation of the growth of life.

The individual being, the proximate object of study, naturally leads, on the one hand, to the study of the members of the same family, species, and genus, and, on the other hand, to the study of all those beings with which it is connected through its conditions of life. Thus we have, on the one hand, the system of natural history and, on the other, the natural life units. Both are, indeed, valuable for scientific investigation. Yet the natural history system has for too long a time been overemphasized in the schools, and, in opposition to it, we should stress the valuable didactic unit embodied in the community of life.

A new subject of investigation, called "Biozönose" (common life), has been developed by Professor Karl Möbius, of Kiel, in his monograph, *Die Auster und die Austernwirtschaft* (The Oyster and the Oyster Industry), which deals chiefly with the economic aspect of the matter. And Fr. Junge has demonstrated, in his work, *Der Dorfteich als Lebensgemeinschaft* (The Village Pond as a Community of Life), Kiel, 1885, how Möbius' idea can be turned to practical use in the schoolroom. Professor O. Zacharias displays singular skill in treating another subject in his book, *Das Plankton als Gegenstand der natürlichen Unterweisung in der Schule* (The Plankton as an object for Natural Instruction in the School), Leipzig, 1907. The *Biozönose* is, according to Möbius, "such a selection and number of species and of individuals as are adapted to the average conditions of the environment and as, while mutually dependent upon one another, preserve themselves by propagation in a restricted territory." The instinct of self-preservation as well as of preservation of the species holds together the members of such a community. This instinct directs the animals of all kinds first to those of their own respective kind and then to such of other kinds as are needed for food; it also directs the animals to plants and the plants to animals, and both plants and animals to the third division in nature, the inorganic. The following units illustrate the control of this instinct: the pond, the brook, the meadow, the heath, the pine forest, the wood of leaved trees, the wooded hill, etc. If we mention also the field, the garden, the yard, we shall be passing to the natural units of life established by man. The latter constitute the transition to the circles which human endeavor draws in nature: agriculture, forestry, mining, shipping, and trades of all kinds. Though the organico-genetic

element does not stand out so prominently in these circles, they still represent units that are more tangible, more intelligible, and better adapted to the practical application of natural history knowledge than the units of the system; and they, furthermore, connect the natural sciences with the humanistic disciplines.[1] All these units may finally be summarized under another organic whole, the home, and here the moral element is added to the physical. This study of one's home is, on its part, related to general geography, and thus the teacher may realize how such units, as the home, can be evolved from the geographical materials, and how easily he can give his pupils an idea of the interrelation between such factors, as the soil, the surface of the earth with its contours and elevations, the flora and fauna, the population in its ethnographic aspects, and general history. To accomplish this, however, the teacher must keep in the foreground the concrete and tangible elements and guard against obscuring, amid the detail of these elements, the teleological principle as laid down by Karl Ritter.

5. History deals with social organisms and traces their genesis. If the teacher attended more to the presentation of the results accruing from one phase of this genesis, then historical instruction would gain in consistency and the periods of historical development could be better surveyed. To illustrate: in earlier times history was divided, in accordance with the prophecy of Daniel (III, 21, ff.), into the periods of the four world-empires: Assyria, Persia, Macedonia, and Rome, and though the resultant scheme was disproportionate, it plainly showed the historical creations in which the various series of events culminated. We could still share the same advantage by merely enlarging the scope of the older division: between the empires of the East and the empire of Alexander the Great, we might introduce the Grecian states at the times of Athens' greatness, and after the Roman Empire we should have, first, the Carolovingian Empire, next, the Christian states of the age of the Crusades, and, finally, the modern states. The genetic element comes out even more in the history of one's native country, which may easily be so represented as to present a gradual growth. With the historical charts one may, to a certain extent, visualize a historical status, and so the genetic presentation of the subject has a well-defined and intelligible aim and purpose.

[1] Herbart, *Outlines of Educational Doctrine*, p. 260.

Scripture itself evidences that the content of religious instruction is organico-genetic in character. Christ likens the kingdom of heaven to a mustard seed which grows up to a mighty tree, and the birds of heaven come and dwell in its branches. In chapter XXV, 2, we showed that Bible History is the prototype of a genetic course; and the relationship which we found between the truths of religion and the historical body of the Church, is truly organic.[1]

6. The organisms of art and literature are treated as ζῶα, when the individual parts are explained in the light of the whole and when the ground-motif is never lost sight of. To study a classic from passages arbitrarily selected is a violation of the rights of both the author and his work. The instructor should prefer complete works to collections, and if short poems are studied, they should be assembled into organic groups. An anthology containing lyrics and short didactic poems, carefully grouped according to content, would appeal to young and old; the bulk of its contents should be taken from the national literature, but some selections from the ancient classics as well as from the Latin literature of the Middle Ages should also be included.

It is very educative to trace the genetic development of a classic; but to do so generally presupposes so much detailed research work as to render it prohibitive for instruction. Yet this does not say that the language and literature teacher should not adopt the genetic method in reading the different kinds of classics. In other words, folk-poetry should be read before artistic poetry; epics, before lyrics and dramas; and historical works, before orations and philosophical writings.[2]

Because of the importance of grammar, mathematics, and philosophy for the course of study we shall treat in detail, in chapters XLIII–XLV, the organisms represented by language, the concepts of quantity, and concepts in general. Now, however, we shall show how well the scientifico-genetic method can be applied to the teaching of astronomical geography.

7. In order to teach astronomical geography thoroughly and methodically, we should follow up successively in the course of study all the phases that this subject has in the course of its historical development passed through. The Homeric age regarded the earth as a plane and the firmament as a vault, and

[1] *Supra*, ch. XXV, 3 and *infra*, ch. LXIV.
[2] *Supra*, ch. XXXVIII, 2.

this viewpoint of sense-perception should also be the starting-point for rational instruction in astronomical geography. The pupils should observe the phenomena to be seen in the heavens both by day and by night, and by and by they should note the variations produced with the change of the seasons. The equator and the tropical circles should first be regarded as paths of the sun, as their names imply: tropics being derived from the Greek τρόποι, (turnings, *i.e.*, of the sun) and equator being an inaccurate rendering of the Greek ἰσημερινός, the equinoctial. The annual path of the sun should be regarded as a spiral line traversed twice; and the ecliptic, as a line obtained by marking with dots the daily position of the sun. The celestial globe, placed for the local altitude of the pole, is the most essential apparatus at this stage of teaching. As the observer here regards himself as standing in the centre of the universe, the viewpoint can be called anthropocentric.

We get away from this viewpoint by recalling reports and accounts of the heavenly phenomena observed in other places; and herein, too, the history of geography and the instruction go hand in hand. Still, the teacher need not slavishly follow the very oldest reports on the subject. Herodotus speaks of the satyrs of the extreme North, as sleeping six months and of the mariners who, sailing around Africa, saw the midday sun in the north (III, 24 and IV, 42). The well of Syene, where the sun was reflected only at the summer solstice, was an object of wonderment to the ancients. When Magellan returned from his trip around the world he found that his calendar showed the 6th day of September, whereas the calendar of his starting-point showed the 7th day. Until recently the calendars of Macao and Manila differed by one day, and this was due to the different routes by which the several discoverers first reached the two places. These and other similar facts may lead the pupils to change their view of the universe and to adopt the Ptolomaic system, or the geocentric viewpoint, which regards the earth as a globe suspended in the middle of the universe. The new facts should be illustrated with the aid of the celestial globe, and the pupils should learn to set it for other altitudes than the local.

The study of the terrestial globe is now in order. Its circles should be explained as projections of the circles discovered on the celestial globe. Charts showing the latitude and longitude for places in different zones, the meridian, the two tropical circles, and some of the heavenly phenomena will familiarize

the pupils with the new point of view. The pupils must now be led gradually to abandon the idea of the daily revolution of the heavens, and to this end the study of the heavenly bodies should now be taken up. Their immense distances from the earth and their great diversity may serve best to raise doubts about their revolving around the earth. Thus the geocentric view may be modified to agree with the teachings of the Pythagorean Ekphantos and the Platonist Heracleides Pontikos, who held that the earth revolved, but did not move forward in space.[1] Some few exercises will familiarize the pupils with this view; and they must, step by step, abandon their earlier views. The motion is no longer from the east to the west, but from the west to the east; the sun no longer rises and sets, but the earth moves towards it and then away from it; our horizon is not stationary, awaiting, as it were, the coming and passing of the stars, but is to be conceived as a disk which is joined at one end to the earth and thus moves along with it.

The astronomers were so long in taking the last step in the development of their science, *i.e.*, in discovering the forward motion of the earth, solely because of the analogy of the sun and the moon. They were familiar with the moon's revolving around the earth in a month, for they observed its daily retard of 50 minutes. They were familiar, too, with the sun's annual rotation, for this they figured out from its daily retard of 4 minutes. But they did not venture to assume different causes for the motions of the sun and the moon; and thus the sun remained a satellite of the earth. But the Egyptians had previously discovered the relations of the inner planets, Mercury and Venus, to the sun, and it was this relationship which finally led the astronomers to study the monthly path of the moon, the positions of the planets, especially of Venus, and the analogy of the latter planet with the earth.

Now we are ready to take the last step, to accept the Copernican or heliocentric system. After taking this step we must again change our previous conception, and the teacher will do well not to represent, as is usually done, the earth's orbit as horizontal and its axis as inclined, but instead he should incline the earth's orbit and place its axis in a perpendicular position; for thus the earth is readily conceived as passing up and down its orbit. It is then easy to explain the high and middle and low position of the earth; the solstices will appear as the points

[1] Plut., *de plac. phil.*, III, 13.

of the earth's turning; the rising of the sun in spring will appear as the earth's setting; and the setting of the sun in autumn, as the earth's rising. The modification which consists in turning to the illustrative methods usually employed, will then offer no difficulties.

To give a course, as is outlined here, the teacher must first have a good view of the historical development of the science. He must, furthermore, not grow impatient with any apparently slow progress on the part of his pupils, but must return again and again to the same points. He must teach his pupils to observe how with the change of the seasons the days and the midday shadows vary in length. He must also teach them to follow the motions of the stars, and here a simple apparatus, modeled after the theodolite of the old astronomers, will be found most serviceable. The passing of the star out of the field of vision, the necessity of changing the position of the rod along which the eye has passed, so that its position towards the horizontal and the perpendicular circle upon which it was projected, is now different, and the divisible motion of the rod rendering easy an illustration of the star's motion—all these factors were the first and basic elements in the history of astronomy, and they are still invaluable for bringing home to the mind many important facts.

CHAPTER XLIII

On the Organico-Genetic Treatment of the Science of Language

1. Of all school subjects, grammar offers most difficulties in applying the organico-genetic principle. In its present form, which has been handed down from the ancients, it is the very reverse of an organic system. The practice of beginning Latin grammar with *mensa, mensæ* violates in no less than six points the organico-genetic principle.

(1) *Mensa* is the starting-point for the study of the parts of speech, which is followed by the study of syntax, whereas the organic principle demands just the reverse order. In language the whole exists before the parts. The thought that is to be expressed, is the first and creates the words and forms. The starting-point for all form-systems is the function that they are expected to fulfil in language, *i.e.*, in the sentence.

(2) The declensions are not the first of the form-systems, because they are based on the relationship of the object and are modified by the relationship of the attributes. But these two relationships are, compared with the relationship between the subject and the predicate, only secondary, so that the forms to which the primary relationship, that between the subject and the predicate, gives rise—such as, number, person of the verb, tenses—should be treated first.

(3) What is known as the first or the A declension, for which *mensa* is used as a paradigm, is a morphological category, and its members are the cases, which, being derived from the relationship of the object, are logical categories. But from the organico-genetic viewpoint the logical element must precede the morphological, and hence the formation of the different cases should be the first principle for making a division, while the variations in this formation, which are conditioned upon the final letter, are but a secondary consideration. Consequently, the group should be not: *mensa*, *mensæ*, *mensæ*, etc., and *hortus*, *horti*, *horto*, etc., but: *mensa*, *hortus*, *leo*, etc., and *mensæ*, *horti*, *leonis*, etc.

(4) But considered even morphologically, the A declension is secondary and developed later than the third, the consonant declension, because in the nominative plural the A declension shows traces of pronominal forms.

(5) Considered as a word, *mensa* is likewise of a secondary character; being derived from *metiri*, it is not a root-word.

(6) The meaning of *mensa*, a measured thing, a table, also discloses derivation. And hence, if the genetic principle is to be recognized in dictionary matters, *mensa* is inferior in two points to other paradigms, such as *via*, for the latter has preserved more of the root as well as of its primary meaning. Thus the genetic principle would relegate to the rear a word that has occupied for so long a time the first page of the Latin grammar.

Mager compares the prevalent method of grammatical instruction with a watchmaker who would train his apprentice, not by taking apart a watch, but by merely showing him the wheels and other parts that enter into the making of a timepiece.[1] "Etymology," he adds, "is the result of many analyses made by the grammarians. The pupil knows and sees nothing of these analyses. He sees only a bulky volume full of lessons which he is to get by heart, but he is never told that these are

[1] *Die genetische Methode*, pp. 50 ff.

parts of a whole. Yet it is only in the whole that the parts function, and it is only in the whole that one can see the import of each part.... What is essential in each part, its soul, its purpose, all this remains obscure in etymology. Every form of a word is solely an effect, the effect of a syntactical fact, which is the cause. But you can not look at an effect intelligently without looking at the same time at the cause." However, to remedy this defect, it is not enough to apply the language-forms as soon as they have been memorized; for this would require the application to precede the comprehension, the technical synthesis to precede the analysis; and, though this order is not absolutely wrong,[1] it does violence to the spiritual nature of language.

2. Language is the expression of thought. This definition must be the starting-point, but should be worded more exactly. Language expresses not only thoughts, but also feelings, wishes, desires—in fact, the whole inner nature as such. In this regard, the logical view of the subject should be corrected by the psychological. Language expresses man's inner nature, but expresses it in the mode of thought. Language is articulate, not only phonetically, but also logically; and in this regard the relationship between grammar and logic may not be interfered with. An organic comprehension of language must proceed from the categories, upon which that articulation is based; and these categories produced, first, the parts of the sentence and, next, the parts of speech and forms of words, which develop and differentiate the non-logical motives of language.

The logical foundations of the structure of language are, first of all, the two categories of being and acting, known also as existence and activity, or as substance and cause. To these categories we can trace the two constituent parts of the sentence, subject and predicate, as well as the two primary parts of speech, the noun and the verb. In the second place, we have the categories of quality and condition, *i.e.*, of accidental being and accidental activity, therefore, of co-operation. To these categories we can trace the secondary parts of the sentence, attribute and object, and the secondary parts of speech, the adjective, the participle, the adverb, and the infinitive. The relation between the predicate and the speaker or other persons is the most important of the non-logical elements of the technique of language, and it is the foundation of the pronouns and the personal suffixes

[1] *Supra*, ch. XLI, 6.

of verbs. By classifying the substantives as denoting either males or females, or that which is neither the one nor the other, we obtain the gender of nouns, which is both natural and logical in English where all words denoting male animals are masculine, while those denoting female animals are feminine, and those denoting neither male nor female, are neuter. But even where, as in Latin, Greek, French, and German, many inanimate things are considered either as masculine or as feminine, the division of gender has historically exerted as great an influence on the grammar of the noun as the personal suffixes have on the grammar of the verb. The function of language to express feelings and desires gives rise to interjections, some kinds of particles, the imperative, the vocative, and other elements. The grammatical figures, which are deviations from the logical forms for the purpose of greater precision, variety, or elegance of expression, are products of the psychical mechanism. Euphony, which modifies and differentiates so extensively the systems of forms, shows that taste also influences the development of language.

Upon the grounds of this synthesis, we can distinguish definite stages in the structure of language and definite groups of language-forms. The first stage is the simple sentence, consisting of but one subject and one predicate. The simple sentence leads to the noun, and, primarily, to the noun in the nominative, and to the verb, and primarily, to the verb in the present tense, the indicative mood, and active voice; because the other forms refer to particular conditions. The logical relationship leads to the number of the two parts of speech; the non-logical element, to person and the substantival pronouns, to which may be added the substantival numerals; the negation also belongs here. To this stage belong also the impersonal expressions with their undeveloped subject and the substantival exclamations with their undeveloped predicate; furthermore, the imperative, the vocative, and the interjection, though the last-named is outside the pale of logical articulation.

Enlarge the simple sentence by adding the relationship of attributes, and you have the second stage in sentence development. Nouns, adjectives, participles, adjectival pronouns, and numerals may serve as attributive adjuncts. This relationship is at the bottom of the agreement which brings out and fixes the gender of the substantives. Originally, this agreement was demanded in the interest of similar endings, namely, for the sake of the rime; but amid the variety of endings this fact has been obscured. The genetive case may also be considered an

attribute, though it belongs, at the same time, to the next stage of sentence development.

The third stage is the simple sentence with the addition of the relationship of the object. This relationship is responsible for most forms: in the first place, for compound nouns and verbs, then for some parts of speech, the adverb and the preposition, adverbial pronouns and numerals, and the *casus obliqui*, all of which express that an object takes part in an action and that it is an incidental condition. The same relationship is responsible for the comparison of adjectives, whose degrees are interwoven with concepts of place, and for tense, which, while expressing time, also designates a co-operating element. We are here speaking primarily of those tenses that express an action without a reference to another action. Finally, we must refer to this stage the voice of the verb, because the middle voice is formed by incorporating the reflexive pronoun which was the object, and the passive voice is developed from the middle voice.

The fourth stage is that of the compound sentence, which consists of two or more simple sentences either expressly or tacitly connected. To the thought-connections that result from the compound sentence we can trace the following: the conjunctions and other particles for connecting sentences, the relative pronouns, the relative tenses, and the subjunctive and optative moods.

3. The teaching of grammar, if based on this series of stages, would be, first, organic, because it lets one understand the language instruments in the light of their end and aim. It would, secondly, be genetic, at least in the sense that the development of language is seen to be based on a principle which governs the successive stages. Although it is impossible to prove in detail that the genesis was historically such in all points, still the successive steps correspond on the whole to the historical stages of linguistic development.

But the language teacher can employ the genetic method in another field and that with more exactness, namely by noting the primitive and the derived forms and the primary and the secondary significations of words and forms. Mager rightly demands that the *simplex* be treated before the *compositum*, and the primary meaning before the secondary or applied. To train his pupils to note the derivation of words, the teacher should place before them such families of words as show the various terms that developed from a single root. The school grammars

treat, indeed, of the media of derivation and of the ways of compounding words, but this does not suffice to give an idea of the wealth of words that have grown out of the roots. Onomastic paradigms are well adapted to this end, for they at least visualize the process of word-formation.[1] The Hindus may well be our models in this respect, for they begin grammar with the list of roots, the dhātupātha.[2]

The different meanings which a word takes on in course of time, also represents a genesis. Here the trunk is the primary meaning, and the secondary and applied meanings branch out from it. When we speak of a derived meaning, we have in mind the picture of a spring whose water is led into several channels. Derivation comes from the Latin *derivatio*, a drawing of water, a turning of water out of its course; and this picture brings out the genetic character of the language process. To deal with the sense development is the object of semasiology, a department of philology that has as yet received but scant attention.

In etymology it is difficult to apply the rule of passing from the primary to the secondary. The reason is that in etymology the derived forms are much more numerous and conform more to general rules than the primitive forms, which appear rather as exceptions, and it is, of course, not advisable for the school to take up the exceptions before the rule. Thus in Greek, for instance, verbs like εἰμί, εἶμι, φημί represent the most primitive conjugation, without a thematic vowel, without any characteristic of tense, without any difference between the imperfect and the aorist. Yet the general character of the Greek conjugation can not be studied in these verbs at all. But it would seem that we should deal with the general type before the exceptional. The experiments in these matters have been so few that one may well expect that further experimentation will, perhaps, solve some of these difficulties. Provided, however, that the pupils take up earlier the reading of Greek texts—which can not be recommended too strongly—even the Greek verbs just mentioned would also have to be treated earlier, as they occur more frequently than any regular verb.

Both etymology and syntax demand that the teacher trace the primary meaning of words. To do so would do away with many arbitrary and even illogical methods adopted at present

[1] For further details see Willmann's essay on the onomastic paradigms, in the *Jahrbuch des Vereins für wissenschaftliche Pädagogik*, Jahrgang 1875. Lattmann has, in his Schulgrammatik, performed a similar service for Greek.

[2] Vol. I, ch. IV, 2.

in teaching these subjects. Nägelsbach has convincingly shown, in his *Gymnasialpädagogik*, that all the usages of the Latin *ut* can be traced back to its primary meaning of "as," "how," and that the translation can easily bring out the original Latin significance. Thus, by rendering "*timeo, ut veniat:*" "I am solicitous how he can come," we do away with the illogical rule given by the grammarians to negate in German, what is expresssed by an affirmation in Latin. Again, the self-contradictory definition of the deponent, a verb that is passive in form but active in meaning, will be avoided by treating all deponents as being in the middle voice and translating them accordingly: *uti*, to avail oneself, *vesci*, to nourish oneself, etc.

Modern philology assists us in applying the genetic method to grammar studies, but ignores and does not comprehend the logico-organic principle. The great advances in modern philology are owing chiefly to the historico-comparative method, and the latter is consequently regarded as the palladium of all progress. But there is a difference between working a newly discovered vein of gold and letting whole shafts fall to pieces on that account. And the logical study of language may well be compared to the shafts of a gold mine. It supplements the comparative method, just as the synthesis supplements the analysis; for the historical method is analytical, because it proceeds along the lines of induction and generalization, while the logical method is synthetical, because it traces the ramification of the categories in the linguistic phenomena. But there is no reason why the science of language should stress the analytical method and the empirical element at the expense of the synthetical and the rational. There is no doubt that the concepts of subject, object, attribute, etc., are indispensable for the science of language. Nor is it less certain that they are also the concepts whence the inquiry should proceed. The logical categories and the morphological terms are related to each other as the warp and the woof in a piece of cloth; neither can dispense with the other. It must be conceded that the synthesis, if applied to material that is not sufficiently prepared, *i.e.*, if it precede the analysis, can not produce solid results and that it may thus discredit its principle. But as soon as the analysis has fulfilled its function, the empirical material can and should be explained through the rational element.

The instruction should guard against a one-sided attention to the empirical element, particularly because the latter must be accompanied not only by the logical element but also by the

technical; and the profit that the grammar of the schools derives from comparative philology should not be obtained at the cost of losing anything on the logical and technical side. The cultivation of the logical side of grammar increases essentially its educational value. It prepares for the instruction in logic. It allows one to introduce conformity into the grammars of the different languages studied,[1] and also establishes a closer relationship between the grammar and the study of the classics, a subject that we shall now treat.[2]

4. Grammar is only a part of a large field whose organic centre is the classical literature, the works of which must be explained and partly also imitated before they can be understood. While the classics are the core of language studies, we find grouped around them the study of grammar, the explanation of the content, and linguistic exercises—which subjects have been touched upon elsewhere.[3]

The first rule to be observed with regard to the explanation of the content is: what can be read from the text, should not be brought in from without, *i.e.*, from a source other than the text. Long introductions dealing with the content of the text, analyses of the content before the text has been read, are all out of place. Why? Because the pupil should learn to glean knowledge from the text and thereby learn to appreciate the book as a source and its author as a teacher. The teacher should not say what the author will say—and presumably say better than the teacher. The teacher's only duty is to see to it that the pupils apprehend and rightly comprehend what has been said by the author.

This leads us to the second rule: all that the teacher must add to the text, should be connected as closely as possible with it. The exegesis should not, without necessity, develop into introductions and excursuses, which may prove real parasites on the educational value of the work itself; but should explain only what needs to be explained. All notes on the content, whether drawn from the text or, if necessary, from other sources, should be so interwoven in the pupil's memory with the text itself, that he will find no difficulty in referring all such comments to the passages where they belong; just as the botanist,

[1] *Supra*, ch. XXXVI, 3.

[2] The logical and genetic elements are well treated in Heussner's edition of the Latin grammar by Putsche-Schottmüller, Hannover, 1889.

[3] *Supra*, ch. XV, 1, ch. XIX, and ch. XXXVI, 3.

too, notes the places where he finds his various specimens. The passage from an author may well prove an aid to the memory similar to that afforded by the graphic representation of any content of knowledge. However, it must be confessed, that it is no easy task for the teacher not to overstep the bounds in commenting on what was read; but he must be severe with himself, lest his pupils lose sight of the author amid the wealth of antiquarian and other materials that may be introduced.

Thus, for instance, when reading Livy's history, one will be tempted to descant upon early Roman historiography, upon the moral corruption of the last days of the Republic, and upon the fact that all noble minds harked back to the great past. But the little that need be said on these subjects, is best introduced in connection with Livy's own words. The expression "*rudis vetustas*" should be the centre of the literary interpretation. The climax: "*mores desidentes, lapsi, præcipites*," and the alliterations: "*desiderium per luxum atque libidinem pereundi perdendique omnia*," are eloquent, in their lapidary style, of the moral corruption of the time. The author's melancholy words: "*prisca illa tota mente repeto*," are not only self-explanatory, but significant, too, of kindred sentiments of after ages.

This connecting the explanation of the content with the text does, however, not preclude such explanations from being summarized and arranged according to their subject-matter. Such summaries, if conveniently arranged with suitable catchwords and the proper references, would prove welcome additions to the school editions of the classics, and should take the place of the alphabetical indexes. For an example the reader is referred to the "systematische Teil" of the author's *Lesebuch aus Herodot.*

5. All language exercises should be connected with the classics. The first exercise is the translation into the mother-tongue. It is preferable to the paraphrase, which was formerly much in use, since the comparison of the foreign language with the mother-tongue is the better means for transforming the language consciousness.[1] The organic principle demands that the translation proceed from the comprehension of the whole, *i.e.*, both the larger whole—the classic that is read—and the smallest whole—the sentence. The translation should preserve, as far as possible, the characteristic beauties of the original; it should preserve alike the charming grace of the poet and the glowing passion of the orator. The sentence must ever be treated as a

[1] *Supra*, ch. XVII, 6.

unit; the pupils must be discouraged from translating merely words and manufacturing sentences out of the words. They should be taught to discover first the sense as the organic centre, and only after they have grasped the sense, should they attempt to render it into the mother-tongue.

If the translation of the texts is the first exercise, then the double translation, *viz.*, translating back into the original what one has translated into the mother-tongue, is the second. The double translation affords a still closer connection between pupil and master than the simple translation.

After a pupil has attempted to reproduce a passage by a double translation, he will reread this text with the closest attention; and all the new matter that is to be made the subject of a similar double translation, he will, because of its practical value, read with increased interest. The simple translation occasions what Nägelsbach has aptly described as a struggle between two languages, and is thereby a powerful factor in transforming the language consciousness. But the gain from the double translation, from rendering the same content twice is proportionately greater. The double translation is, in fact, a double struggle between two languages, with only a change of rôles: what the mother-tongue has seized from the foreign language, must be recovered by the latter. The double translation should receive much more attention in instruction. Specially prepared exercises can be defended only on the ground of being used for drilling the pupils in the application of certain rules, and they should draw, at the least, for their words and phrases upon the classics read, so that the pupil will be obliged to reread a passage in order to prepare for the new exercise; and thus he will be able to note, in the course of his exercises, how much of his progress is due to the reading of the classics. The different stages in the assimilation of knowledge (reception, comprehension, and application) can not properly interpenetrate one another unless they have the same material foundation; and the philological circulation[1] will not function unless the juices and the blood are obtained from the same foodstuffs. Independent exercise books, *i.e.*, such as have no connection with the authors read, remain, though they may be perfect in details, naught but parasites.[2]

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[1] *Supra*, ch. XXXVI, 3.

[2] The *Lateinisches Übungsbuch für Tertia*, by H. Busch and W. Fries, is a model book of exercises based on the authors read in the schools.

The memorizing of choice selections from the authors read will prove a strong bond for connecting the reading of the classics with the language exercises. This was the secret of the strength of the old Latin schools: the texts that were memorized, gave the pupils a solid and fixed basis for language expression. Of modern educationists, Jacotot achieved signal results by adopting similar methods in teaching style. Ruthardt intended his *Loci memoriales* to serve as standard material for memorizing.[1] He rightly claimed that this material, by being repeated systematically, will be continually refreshed in the mind and will thus become the property of both teachers and pupils, eventually proving superior to all other means for familiarizing one with the spirit and the characteristics of the respective language. By working with the material thus stored in the memory, the reading of the classics will grow easier and the mind will be trained to exact thinking. "The classical material," observes Ruthardt, "stored in the memory will gradually create in the pupil a sense of language that will serve as the unconscious foundation of independent production. The stock of terms and expressions is not only the core around which the pupil may collect his knowledge and skill, but—while being a source of joy to its possessor—it is also an aid to the understanding." There is, however, one serious defect in Ruthardt's plan. The material that he recommends for memorizing, consists of unconnected sentences and periods, whereas it should be taken from no other source than from the authors read by the pupils. The true *Loci memoriales* are orations from the histories, Livy's introduction, introductions from Cicero's orations, passages from Sallust, and similar materials. It is only when the material to be memorized has been selected from the actual reading of the pupils, that the exercises based thereon will deepen and perpetuate the impressions received from the classics. If selected, on the contrary, from other sources, or at random, the material that is memorized will only weaken the interest in the classics. Yet it is of the greatest importance that what is memorized should be carried on from class to class, and the teachers must take care lest what was learned in a lower class be forgotten in a higher. To carry along something of this kind for whole years together—and we may expect that much will be retained in the memory throughout all later life—can not but exert a whole-

[1] Ernst Ruthardt, *Vorschlag und Plan einer äusseren und inneren Vervollständigung der grammatikalischen Methode, die klassischen Sprachen zu lehren*, Breslau, 1840.

some influence upon the moral nature also. This practice, moreover, perpetuates venerable traditions, for the memorized classics represented the earliest "*thesaurus eruditionis.*"

6. The study of grammar should likewise be correlated with the reading of the classics. Grammar, as taught in the schools, should confine itself to the forms occurring in the authors read, and should, as far as possible, draw upon the same source for all illustrations of its rules. A further consideration should guide grammarians in selecting the examples for the rules of grammar. These examples offer a good opportunity for acquainting the pupils with the gnomic element of the respective language. K. W. Krüger has demonstrated, in his grammar, how well proverbs, wise sayings, *loci communes*, many of them χρυσᾶ ἔπη, truly golden sayings, will illustrate the application of a grammatical rule. Though these quotations do not correlate the school texts with the language rules, still they establish a connecting link between literature and grammar, for the gnomic element is a product of the art of language and as such is entitled to a place in literature. It illustrates the spirit and character of a nation, and does this not less clearly and withal more intelligently than the classics themselves. In this point, too, we should revive Humanistic traditions—though the collections of the *Adagia*, such as Erasmus and other Humanists brought out, do not meet, because independent of the school texts, the real purpose of language studies.

If the reading of the classics were governed, as we showed above, by the organic principle, we should have a closer connection between it and grammar. Grammar, as it is now usually taught, seems rather to lead away from the classics than towards them, for it does not proceed from a whole, but from the individual word. Present-day grammar is modeled after the grammar of the Alexandrians, but the primary function of the Alexandrian grammar was to teach the correct use of the mother-tongue.[1] For this purpose it is best to begin with the individual word; for when speaking or writing our mother-tongue we are generally less concerned with the word—for this is usually at our command—than with the correctness of its form in a special case. But this information is, for the most part, supplied by etymology, the first part of grammar, and any further information needed is supplied by the second part, syntax. In conformity with its purpose, etymology deals first with the various

[1] Vol. I, ch. IX, 3 and *supra*, ch. XV, 2.

endings, and employs, therefore, the morphological categories, the first or A declension, etc., the first or A conjugation, etc.; while the logical categories of syntax, number, case, tense, etc., are treated only as the second principle of division. The form-groups of etymology are assembled according to the common ending and are classified according to the significance of the forms. The viewpoint is technical, *viz.*, that of the use of language. But the exegetical viewpoint, which must be our viewpoint, demands something else. He who would explain a text, is confronted with forms of language, and is concerned with the meaning of these forms. What he needs, is a science that will teach him how to recognize accusatives, perfects, subjunctives, etc. But in such a science these syntactical terms, *i.e.*, the logical categories, must be the first principle of division, while the morphological categories are the second, so that the form-groups would be arranged under such headings as accusative formation, perfect formation, subjunctive formation, etc.; and an arrangement according to the final endings would be but a subdivision of the first classification. Current grammar meets the reader's needs only indirectly. The reader asks, for instance, "Is this form ending in *is* a nominative, a genetive, or a dative?" He receives this answer, "The A stems have these case endings; the O stems, those case endings, etc." Among these endings the reader will find also *is*, but it must first be, as it were, unearthed from among the rest. But a science dealing with the interpretation of forms would answer the question directly; and its guiding principles would also lead over into syntax, which determines more exactly the usage of forms, whereas in current grammar, etymology and syntax are arranged according to different categories.

Grammar would, if so arranged, not lead away from the reading of the classics and would also, in the case of a foreign language, be well adapted to language exercises. When learning a foreign language, one is as interested in obtaining case forms and tense forms as in declining or conjugating a given word. This is particularly true of such languages as have different declensions for the noun and the adjective. If a foreigner would use an adjective of such a language as an attribute, he must combine two different systems of forms and, if the gender is also subject to change, he must let whole paradigms pass muster in his mind. Current grammar, however, does not meet the needs of the beginner in Latin either with regard to the comprehension or with regard to the application. It fixes all

his attention on the inflection of words; and the categories, although they govern the inflections, are imparted, so to say, in an underhand way, for they must be acquired along with the forms. For example, while learning to decline *mensa* and to conjugate *amo*, the boy must at the same time learn the principles of syntax which are responsible for the declension and conjugation, though he is apparently learning forms only. Instead of being equally divided, the whole burden is thus laid on the beginning of etymology, while what is most important and of the greatest educational value, is treated as something incidental.

7. The demand that grammar be correlated with the classics, is made primarily for those grades in which both are subjects of instruction. But it should govern also that elementary instruction in language which precedes the reading of the classics. The development of Latin instruction has influenced the methodology of elementary language instruction. In the Middle Ages there was only one didactic instrument employed in elementary language instruction—the grammar; but, being written in Latin, it served also as a reader. And besides, the student heard Latin on all sides, for Latin was, in some measure, a living language still. The Humanists compiled easy texts, which, though they accompanied the first grammatical instruction, were nevertheless not correlated with it throughout. The language books of the 18th century were the first to correlate grammatical instruction with the reading of the classics: they illustrated by sentences, in a sort of running commentary, the rules of grammar. The most successful of these books was Meierotto's *Latin Grammar in Examples*, 1785, where we find, instead of paradigms, series of sentences, mostly proverbs, which embody the respective rules, and thus form an admirable method for teaching rules by examples. Mager employed the genetic method in his French language book and recommends it for Latin instruction; he proceeds from the simple sentence and, by introducing into it different modifiers, illustrates successively the different forms. Mager's and Meierotto's are the most important experiments made in this line, but they both fall into the same error of occupying the pupil too long with unconnected materials and of thus making him learn too many words that are of no help to him in reading the classics, while it is precisely for this that the elementary language instruction should prepare. Yet practically all exercise books in use labor under the same defects

and lack, moreover, the redeeming features of Mager's and Meierotto's books.

After what has been said, it is clear that the first exercise book should cover the work of one year; it should prepare for the first Latin reading—whether this be the *Epitome historiæ sacræ* or Lhomond's *Viri illustres Græciæ* or *Romæ* or anything similar so long as it is a connected whole—and should also smooth the way for an organically arranged grammar. For the reading it should prepare by taking its vocables from the text to be read; and for the study of grammar it should smooth the way by exemplifying in sentences the most important forms. Meierotto's work may serve as a model for such an exercise book, for the latter should contain suitable proverbs to illustrate the rules of grammar.

To pass from such an exercise book to the grammar, would be but a step, because the grammar would differ from the exercise book only in that it derives the rule from the example and places the rule before the example.

CHAPTER XLIV

On the Organico-Genetic Treatment of Mathematics

1. The method of our school mathematics is, like that of our school grammar, handed down from the ancients, but is opposed to the organico-genetic principle. We have shown above (ch. XLI, 5) that this Euclidean method combines synthesis and analysis in such a way that the presentation proceeds synthetically, but in detached sections, namely, in theorems and problems, whose proofs and solutions respectively are given analytically. Euclid's method is strictly exact and skeptically careful to accept nothing that is not proved, and is truly artistic in its structure, for no theorem is introduced before the means for its analysis are at hand, and each theorem contributes its share of such means for analyzing the succeeding theorems. These high merits have gained for the method an exceptional authority and have led to its being applied to other materials, especially to philosophical truths, which, when proved *more geometrico*, seemed to be unassailable.

But the method is, in reality, less intelligible and less perspicuous than the simple synthesis which presents the theorems in a continuous development. Hence modern thinkers have also

criticized it severely as being partly the very reverse of the genetic method. Herbart, for one, finds fault with it for using arbitrary auxiliary lines and computations: "The mind that wanted to sink into the depths of the subject itself, is deflected and hurried hither and thither through a number of narrow, crooked bypaths.... To be sure, we must believe the proof, for considered step by step there has been no logical slip. But not seeing through the whole, quite contrariwise, every separate step making a separate thinking act, one would almost as willingly take the word of a clever teacher for it."[1] He demands that the analysis let itself drift through the given concepts to those which embody the internal necessity of the theorem. Hegel, on the other hand, takes exception to the fact that in Euclid "the various concepts that are needed for the argumentation, are adduced from anywhere and made to serve as preparatory material. The proof is not the genesis of the relationship that constitutes the content of the theorem...; it is but an external reflection that enters from without into the inner nature of the subject. In other words, it concludes from external circumstances to the inner property of the relationship."[2]

Trendelenburg's criticism is most thorough as well as most pertinent. "In Euclid," he says,[3] "the most important theorems are proved only from the external relationship and by incidental views, but not in accordance with the elements necessarily given with the concept of the thing.... If the full and complete theorem comes first to be followed by the proof, the whole resembles a series of rigid statements, which obtain a footing and then entrench themselves. There is everywhere an artistic concatenation, but nowhere a growth and development. The method that we recommend (the genetic) leads farther, for it directs us to find what lies in the nature of the thing and not to confirm, by a discovered relationship, that which has been obtained from outside sources. The theorem is gained anew and not supported merely externally."

2. The Euclidean method, as well as the ancient mathematical method in general, is connected with the middle position which mathematics held among the ancients. Its function was

[1] Herbart's *A B C of Sense-Perception and Introductory Works, transl. by* W. J. Eckoff, New York, 1896, p. 164.

[2] *Subjektive Logik*, Werke V, pp. 302 ff. and pp. 274 ff.

[3] *Logische Untersuchungen*, II, pp. 370 ff.; for other references see Mager, *Die genetische Methode*, pp. 23 ff.; cf. T. Wittstein, *Die Methode des mathematischen Unterrichts*, Hannover, 1879.

to lead beyond the empirical and prepare for the cognition of ideas, but by way of practice. What Plato said of arithmetic is equally true of mathematics in general: it is the arena of study and practice such as can nowhere else be found.[1] Thus we find in mathematics a technical element—technical, not in the sense of practical application after the manner of surveyors, a view expressly excluded—but in the sense in which we contrasted the technical with the logical.[2] Hence the form of the problem, the construction, the combinative method, the careful providing of all the parts needed.

This viewpoint is not at all foreign to mathematics. We have elsewhere characterized mathematics as the science of problems, and have found one factor of its educative content in its many-sided experimenting and trying, its manipulations and operations, and its use of questions and answers.[3] The two elements of mathematics, the logico-speculative and the technico-combinative, are combined in different ways in the single departments of this subject. They are more easily separated in arithmetic, so that a purely synthetical course of study can be paralleled with a course in exercises. In geometry, however, the combination of the elements can not be exhausted by a continuous presentation. Here the threads cross at so many points that it does not suffice to follow them up singly: their knots also must be examined and opened. Geometry consequently can not be presented in a purely genetic way, or in the form, perhaps, of a genealogical tree of cognitions. Instead, the latter grow from their principle, the nature of space, simultaneously in different directions, so that they can not be assembled without repetition and combination, and this excludes all abritrariness. Therefore we can not agree with Herbart who says (*l.c.*), that the internal necessity of a theorem is not discovered as long as there are two or more proofs that make the thing equally clear. On the contrary, if we have but one proof, we can not be certain of having discovered the true position of a theorem, because only a plurality of proofs corresponds to the various relationships that are possible between this and other

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[1] *Rep.*, VII, p. 526: ἃ γε μείζω πόνον παρέχει μανθάνοντι καὶ μελετῶντι, οὐκ ἂν ῥᾳδίως οὐδὲ πολλὰ ἂν εὕροις ὡς τοῦτο.

[2] *Supra*, ch. XL, 3. Both elements may be recognized in the combination of theorems and problems; the former are proved and the final formula is: ὅπερ ἔδει δεῖξει, the latter are solved and concluded with the words: ὅπερ ἔδει ποιῆσαι.

[3] *Supra*, ch. XXIII, 2 and 3.

theorems. Herbart is likewise unfair in missing "philosophical transparency" in the presentation of mathematics. Trendelenburg also assigns to mathematics what belongs properly to philosophy, for he says (*l.c.*), "No science is so well adapted as mathematics to develop the content of a thing from its concept." For such a development mathematics has, admittedly, the best major premises, but among the minor premises there are so many of equal value that one must needs select, combine, and construct.

We have taken the position that mathematics should be reinstated as a middle member between the empirical disciplines and philosophy,[1] and for that reason we had to defend, though not without some qualifications, the Euclidean method. The fault of Euclid does not lie in his connecting the logical and the technical elements—this is unavoidable and even desirable in instruction—but in his interweaving the two elements, even where it would be advantageous to the logical element to keep them separate. We shall make no mistake in following the principle laid down before: synthesis, if possible; analysis, if necessary.[2] Applied to the present subject, this means: adopt the purely synthetic method, identical here with the genetic, as long as cognitions can be obtained from the essence of the magnitudes and the nature of number and space; but analyze, combine, construct, wherever it may be necessary either because of the complexity of the subject or because of the need of exercises.

In order to illustrate what has been said and at the same time to give a view of the many problems made available by the genetic arrangement of school mathematics, we shall add a few remarks on the materials of this subject. Of course, our remarks do not purport to present a complete course of mathematics, for to outline such a course, we should have to look at the subject, not only from the present viewpoint, but take into account also the relation of mathematics to other subjects, especially to what should be its capstone—astronomy.[3]

3. The starting-point in arithmetic is magnitude, which, if joined to a unit, becomes a numerical magnitude. If we proceed from the unit, we shall in the case of separate magnitudes be counting, and in the case of continuous magnitudes we shall be measuring. Both operations combine one with one, and at the same time take away successively the units from the magnitude to be developed numerically. But if we proceed from the magnitude, the magnitude is divided and the parts are grouped

[1] *Supra*, ch. XXXVII, 2. [2] *Supra*, p. 230. [3] *Supra*, ch. XXXVI, 4.

and assembled as units, as is done, for example, with magnitudes represented symmetrically. In this case the numerical magnitude is obtained, not, as in theformer case, by combining, but by taking a number of units a number of times. Thus the operations of combining and taking away as well as of dividing and taking a number of times are met as soon as we obtain the concept of number, and consequently they are equally primitive. The object of these operations was the unit and the magnitude to be developed numerically. But if we apply these operations to number, we shall have calculation. By combining two numbers after the manner of combining one with one, we obtain a sum; and this combining is called addition. By taking a number of units a number of times, we obtain a product; and this operation is called multiplication. Between the sum and each summand there is a double relationship; to obtain the summand from the sum, one must take away the remainder; but to obtain the sum from the summand, one must add what is missing. In calculating, both methods coincide, since S decreased by a, as well as a until S, is expressed by $S-a$. Between the product and the factors there is an analogous double relationship. We obtain a factor from the product by dividing the latter, but to obtain the product from the factor, we must measure the former by the latter, *i.e.*, see how many number of times the factor, now called the divisor, can be taken from the product. By the former process we obtain the partial magnitude; by the latter, the quotient; in calculation, however, both methods coincide in division.

Addition is not more primitive than multiplication, just as arithmetical proportion is on the same plane as geometrical. The sum can be considered as a product, obtained by taking groups of units a certain number of times; and the product may be considered as a sum, consisting of equal summands. In the latter conception, multiplication appears as the indirect operation and, one may say, as a story added to a building.[1] A second story is obtained by the product of equal factors, therefore, to power. By distinguishing the measuring from the dividing we have prepared for the fact that these two inverse operations correspond to involution and evolution: the root, *i.e.*, the equal factor, corresponds to the partial magnitude; but the exponent, to the quotient, because it counts how many number of times the root can be divided into the power.

[1] *Supra*, ch. XXIII, 3.

In all operations given numbers form other numbers. But some operations form at the same time new kinds of numbers, and this is done by removing certain limitations by which they were originally bound, and by thus enlarging their scope. Subtraction presupposes primarily that only the smaller can be taken from the greater. When it does away with this presupposition, it produces the negative magnitudes. Division proceeds primarily from dividends that contain the divisior a certain number of times. Remove this limitation, and division produces fractions and irrational numbers. In the same way we obtain radical quantities and logarithms by extending the respective operations to magnitudes which can not be represented as powers of integral numbers. Evolution, however, leads besides to new categories of magnitudes by the law that so many values correspond to each root as the exponent has units. When the categories of the positive and negative numbers suffice for the square root of the natural numbers, the fourth root will result in the imaginary magnitudes and the other roots will lead to the complex magnitudes.

The numerical magnitudes are not produced sporadically, but in series, which assemble in the natural series of numbers. The latter is employed in mathematics almost exclusively as material, whereas it ought to give rise to many stimulating and practical ideas. In this line we can learn of the ancients, whose arithmetic abounds in suggestive operations of a kind to render the work of figuring more interesting. But also the form of the series in general deserves to be applied more extensively, as it is well adapted for familiarizing the pupils with the concept of the variable magnitude, and many schoolmen rightly demand that this concept be imparted along with the elementary concepts of magnitudes. Furthermore, the series suggest the simplest explanations, for instance, in the theorems of powers, when their exponents are conceived as ascending and descending. A further important aid to the understanding is the spatial representation of numerical magnitudes, and in this matter, too, we may well imitate the ancient method of letting squares, rectangles, and gnomons represent numbers. Thus to explain the theorem of the multiplication of differences, we should make a drawing: from the whole rectangle ac we must take the rectangles bc and ad to find the product of the differences $a-b$ and $c-d$, and in this operation the rectangle bd, common to them both, seems to be taken away twice, therefore it must be added again. This procedure is apt to bring home to the pupils that negative magnitudes give a positive product.

4. Algebra is based on arithmetic when it determines quantities from equations; for this is done by finding the unknown quantities—which are related by different operations to the known—by means of the opposite operations. In this respect, algebra employs a technical process. But as it must also formulate as equations such questions and problems as deal with relations of magnitude, it must turn to reasoning. If the "problems in letters" can be solved by computation, then the "problems in words" require logical operations, and represent, therefore, a higher stage. Yet the subject as well as the interest of instruction suggests that one prepare by the technical step for the logical step to follow. Upon closer consideration, we recognize that equations, if not too complicated, can be solved by simple reasoning; and this means should be employed besides the technical solution.

Thus, for instance, the quadratic equation that apparently can not be solved except by completing the square, can, in point of fact, be solved by merely drawing certain conclusions; *i.e.*, if we proceed from the following problem: To find two numbers, whose sum and product are known. Let the sum of the numbers be s, and each of the numbers will represent a part of s, which we shall suppose to be one-half. But we must add the further condition that their product is p; hence the one number must exceed $\frac{1}{2}s$. The product of the two numbers is, therefore, that of a sum and a difference, consequently the difference of two squares. The minuend is $\frac{1}{4}s^2$, and their subtrahend must have the property of changing the minuend into p, and must, therefore, be $\frac{1}{4}s^2-p$. The number whose square is formed by this subtrahend, is consequently $\pm\sqrt{\frac{1}{4}s^2-p}$. This, therefore, is the number, which must be added to $\frac{1}{2}s$ once, then subtracted from it, and the two numbers required are therefore:

$$\frac{1}{2}s \pm \frac{1}{4}s^2 - p \text{ and } \frac{1}{2}s \mp \sqrt{\frac{1}{4}s^2 - p}.$$

5. The spatial magnitudes, which are the subject of geometry, have three distinctive properties: extension, position, and form; and these are the basic principles of geometry. Extension has three dimensions: linear, represented by an infinite straight line; extension of the plane, represented by straight lines intersecting at right angles; and spatial extension, represented by three straight lines intersecting at right angles. These basic forms of extension are continued, on the one hand, by inserting lateral

directions and, on the other, by repeating the directions from other points. By inserting the lateral directions we obtain from the intersected straight lines the wind rose, and from the three straight lines an analogous form. If we continue the inserting indefinitely and at the same time give a definite length to the straight lines marking the direction, we shall obtain the circle and the sphere, the simplest limited space forms, which may be best illustrated by the horizon and the celestial globe. By repeating the direction of the linear extension we produce parallels. By repeating the intersected directions in the same plane we produce parallelograms, primarily the square and the rectangle; and in space we produce by the same operation parallelopipeds, primarily the cube. The comparison between the square and the circle, on the one hand, and the cube and the sphere, on the other, leads to the regular figures and regular solids. The latter occupy a unique position in as far as their symmetrical form corresponds more to the nature of extension than does the shape of irregular forms. This circumstance accounts for the preference that the ancients showed for the regular figures and solids.

Space includes all points and positions, and the basic forms of extension supply the means for their determination. Analogously to the twofold increase of the direction, there is a twofold determination of points, either by straight lines, issuing from one point, or by parallels to intersecting straight lines. In the first case the point is determined by the angle or arc which the radius focussed on the point makes with a straight line in the plane or with two straight lines in space. In the second case it is determined by the distance from the intersecting straight lines. A combination of both methods of location constitutes the determination of the point on the surface of the sphere by means of intersecting arcs. The first of these methods is employed particularly with triangles, and marks the beginning of plane trigonometry; the third marks the beginning of spherical trigonometry; and the second is applied in analytical geometry. But the underlying concepts are all of an elementary nature and the pupils should be acquainted with them long before they take up the disciplines mentioned, just as the concept of the variable magnitudes must be familiar to them long before they take up the theory of functions. Pestalozzi tried to base his "A B C of Sense-Perception" on squares and rectangles, and herein he followed the right course, as the concepts of extension and place suggest these figures. However,

he lacked the knowledge and skill to carry out this idea, so that he ultimately produced nothing but a perception-instrument for fractions. Herbart, on the contrary, based his "A B C of Sense-Perception" on the triangle; for he attended chiefly to the determination of place and position, but neglected the viewpoint taken by Pestalozzi. To obtain a genetic elementary geometry, we must take into account both Pestalozzi's and Herbart's methods and combine them properly.

The study of the form must proceed from the basic forms of extension and such as are next to the basic. For the figures the square is the starting-point, and should be followed by the rectangle, the right triangle, the parallelogram, and only in the last place by the triangle in general. This series is crossed by the series of viewpoints for studying the forms with regard to: 1. shape (sameness of shape-similarity); 2. equality (sameness of shape and size); 3. construction and computation through parts known; 4. perimeter; 5. sum of the angles; 6. area; 7. proportionality of sides; 8. proportionality of planes; 9. divisibility (symmetrical, unsymmetrical).

In the interest of the simplicity and clearness of the system, we must distinguish carefully the basic from the applied, the essential from the accessory, and, furthermore, assign to each proposition its proper place; and in doing so we must regard the inner relations more than Euclid does.

6. To illustrate, we shall take the theorem of Pythagoras, which owes its fame not only to its name but also to its position in Euclid, at the end of the first book of the *Elements*. Euclid gives the well-known constructive proof of the equal triangles, which have the same base and altitude as the parallelograms to be considered. Though this is a meaningful construction, it rather conceals than reveals the inner relations of the theorem. These relations are brought out by the algebraic proof which is based on the similarity of triangles, into which the given triangle is divided by the perpendicular on the hypotenuse. However, this proof takes a roundabout way, inasmuch as it passes from the similar triangles, *i.e.*, magnitudes of area, to the proportional sides, *i.e.*, linear magnitudes, and then by multiplying them returns to magnitudes of area. The theorem, however, can be deduced directly from the law that the areas of similar figures are to each other as the squares of any two homologous sides (or of any two homologous lines). Accordingly, the given right triangle is to each of the two triangles formed by the per-

pendicular on the hypotenuse as the square of the hypotenuse is to the square of each of the legs. From this proportion we may deduce the other: the square of the hypotenuse is to the sum of the squares of the legs as the whole triangle is to the sum of the smaller triangles; and in this proportion the equality of the first pair follows from the equality of the second. Herein we perceive directly that the respective relation of the squares is conditioned upon the right angle: only the right angle admits of a division in which its two parts are equal to the other two angles of the triangle, upon which again is based the similarity of the partial triangles to each other and the whole triangle. All this may be expressed in the following form: To deduce from the nature of the right triangle, on the one hand, and of the square, on the other, the theorem of Pythagoras. It is a property of the right triangle that by drawing a perpendicular from the vertex of the right angle to the hypotenuse, it is divided into two triangles similar to it and to each other, which can not be done with other triangles, as it is conditioned upon the right angle. The square has the property of being the standard of measurement; it is used in measuring plane figures, and that not only when used as a small figure, but in every size. Now similar figures are in the same proportion as their standard of measurement, and squares placed upon homologous sides can be considered as such. Consequently, those partial triangles are to each other and to the whole triangle as the square upon the homologous sides, therefore also upon their hypotenuses. Hence we have the proportion:

$$T : t : t' = S : s : s'.$$

Because the sums of homologous members of proportion are again in proportion, we obtain:

$$T : t + t' = S : s + s',$$

and because $T = t + t'$, $S = s + s'$.

The proof of the theorem can then dispense with the chain of reasoning, and can be given in this single sentence: The square upon the hypotenuse is equal to the sum of the squares upon the legs, because the right triangle upon the hypotenuse is equal to the sum of the triangles upon the legs similar to it, and because the areas of these triangles are in proportion to the squares.

When looking for such a constructive deduction of the theorem of Pythagoras as would remain close to the nature of the right triangle and dispense with the auxiliary lines, the follow-

ing might prove most serviceable. The area of the right triangle may be determined in two ways, as it can be considered the half of the rectangle formed either by one of the legs or one of the hypotenuses and its altitude. If we construct both rectangles, they will appear so inserted in one another that the given triangle forms their common half, while three parts, which are not common and which are right triangles, appear to be placed upon its sides, between which there is the relation that the triangle upon the hypotenuse is equal to the triangles upon the legs. The same relation must exist between the rectangles similar to each other, which form the double of these triangles, and it must hold also for the squares, whose complements these rectangles may be, as they are to each other as the rectangles. If we draw the figure, we shall easily follow up in the following order the relations of the figures upon the sides of the triangles: triangles, rectangles, squares. To better visualize these relations, it is well to cut out these figures and attach them successively. This method of visualization should be employed more extensively with geometrical propositions, and the proofs should be arranged in accordance with such visualizations.

CHAPTER XLV

On the Organico-Genetic Treatment of Philosophy

1. Of the philosophical disciplines, logic is most closely interwoven with the other studies, and by taking counsel of the ancients, especially of Aristotle,[1] it will not be difficult to represent it as also growing out of these other studies. Aristotle treats logic as a special discipline, while Plato still regarded dialectic as the science of ideas or of the nature and laws of being—the higher metaphysics. Etymologically, dialectic means the art of conversation, the art of forming ideas for the purpose of conversation. Of dialectic taken in this sense Socrates was master, for, unlike the Sophists, who proved by specious arguments anything proposed, he always strove to arrive at a solid content of thought and knowledge.[2] Plato, when raising dialectic to fundamental philosophy, did not materially change its character. Aristotle, however, defines dialectic to be the method of arguing with probability on any given problem and of defend-

[1] *Supra*, ch. XXIV, 4. [2] Vol. I, ch. IX, 6 and *infra*, ch. XLVI, 1.

ing an opinion without inconsistency. But he, too, allows to the science that deals with the invention of thought at least one part of logic, that dealing with the topics. But to analytics, another department of logic, Aristotle assigns the function of being the organon of true scientific knowledge.

The rhetoric of the ancients used logical elements extensively, and the Renaissance reestablished this practice.[1] The mistakes made in reestablishing this practice are not unavoidable, and logic may well be treated at the same time as the technique of knowledge and of the development of thought, and this will correspond to its original character as well as meet the demands of natural thinking and, moreover, make it easier to correlate logic with the other branches. The mature pupil invents thoughts when writing compositions, and is then unconsciously engaged in practical logic; and in the directions he finds in the rhetoric summarized in the verses, *Quis*, *quid*, *ubi*, etc., and *Quis*, *quid*, *cur*, etc., he has lessons in logic, although they do not appear as such. If the instruction in logic would begin with making this unconscious activity conscious, by leading the pupil to observe the operations of his own mind, then logic could truly be said to grow from the pupil's own field of activity. The pupil would thus obtain a glimpse of the whole of the logical lessons, and would thereby behold the *terminus ad quem*, which is the goal of the genetic treatment to be taken up now.

The usual treatment of logic which follows the series: concept, judgment, and conclusion, etc., is synthetic, but not genetic, because in natural thinking the judgments do not grow out of a union of concepts, neither do the conclusions grow out of judgments. There is the further defect that the concept is treated as a known quantity, which renders it difficult of comprehension. The genetic principle demands that these forms of thought be treated as products of thought, and that the study of logic proceed, therefore, from psychological data. But there is no need here of starting with perceptions and presentations, since the psychology of the thought process, which must be introduced, supplies sufficient material. The teacher must here present briefly and simply the psychological process of thinking and reasoning, the proper object of thought (universality, essence, reason, necessity), and the thought processes. All this he should treat in the light, first, of quotations from Aristotle and, next, of examples from the course of instruction. Only after

[1] Vol. I, ch. XXII, 3.

this should the teacher treat the forms, laws, and operations of thought, taking care to apply continually the principles of psychology. While treating the processes of thought, especially the division and the proof, one will come back to the starting-point of the invention of thought, as applied particularly in composition work. If logic is taught in this way, it will remain in all its stages connected with linguistic instruction, and through a judicious selection of examples it can be correlated also with the other branches of the curriculum.

2. Empirical psychology is usually and properly considered the second propædeutical discipline, for logic, the science dealing with thought, must be supplemented by psychology, the science dealing with the soul. It will be well in teaching logic to call attention occasionally to the fact that the thinking man is not the whole man, so that psychology may obtain some points of contact. These points of contact are important for the reason that they bring home to the pupil the fact that the propædeutic instruction is a unit. Psychology should, like logic, proceed from the attention that the pupil gives to his own thinking, with this difference, however, that it must attend to the whole field of inner activity. It is an empirical science, and remains such even when dealing with the psychological inductions that are embodied in the terms used to designate the mental processes. This empirical material should be increased by adducing proverbs, adages, quotations from the poets, for these often characterize, in apt and pithy form, the psychical facts. The terminology must receive special attention; but this leads us back to the ancients, particularly to Aristotle. What Trendelenburg has said of Aristotle's logical terms, is equally true of his psychological terminology: "If, as the proverb has it, words are worth money, then the philosophical terms of Aristotle are still good hard cash, though to many minds, that fail to realize what these *termini* originally implied, they seem to possess no more than the imaginary value of paper-currency. It is important that we go back to their sources and ascertain their original value, for that value is still theirs and is in no way impaired. Hence Greek philology must explain the respective terms of our living language, and the pupil will herein note an important example of Greek influence."[1]

[1] *Erläuterungen zu Elementen der Aristotelischen Logik*, 2nd ed., 1861, p. 8. Here is an opportunity for applying most effectively the principle upon which von Wilamowitz-Mœllendorff's *Greek Reader* (London, 1906) is based; our

The empirical treatment of psychology is thus enlarged to one that is empirico-historical; and it will prove a force for enlightenment, not only by directing us to observe ourselves and others, but also by giving us an account of the knowledge of these matters. To prepare the pupil for the study of psychology proper, it is best to give him an idea of what has ever been recognized as psychology. It is unpedagogical and unwholesome for the college student to let him take up without such a preparation the most modern study of this science.

Psychology can, like logic, be treated genetically. Proceeding from logic, we may be seeking the whole man, and then we need but qualify this object of psychology and we shall have the *terminus ad quem*, which is the point of orientation for the genetic treatment. All activities of the soul meet in the character, primarily in the moral character. What biographies do for individuals, that psychology must, in a measure, do in general. The introduction should, therefore, present the elements of the moral character, and these elements will serve as the framework to be filled by the treatment of the single activities of the soul. Select for class-names, say, the following—sense and impulse—circle of presentation and of interests—understanding and will—reason and feeling—and you will have a series of genetic stages. Here, too, the course of study will ultimately return to its starting-point: the moral character is at the same time the end; but having reached the end, one can show how it is conditioned upon the ideal world-view, which is the final point reached. This will afford an opportunity for stressing the ethical element of psychology, which is desirable, as the propædeutical course in moral philosophy is generally crowded out. But a course in psychology, if planned along the lines of the Socratic *γνῶθι σαὐτόν* and Augustine's *Confessions*, can eventually supply its place.

3. But the educative content of philosophy can not be brought out in the course of instruction without elementary metaphysics as the third propædeutic discipline. Metaphysics alone can, on the one hand, develop in the pupils the speculative interest and, on the other, prepare the ground for a philosophical world-view; the chief function of logic and psychology being to enlighten the mind.[1] The instruction in elementary metaphysics

connection with philosophy is vital and organic—provided, of course, that the connecting threads be not torn by ignoring the Middle Ages. But in the *Greek Reader* it is just this field that has been ignored.

[1] For the three factors in the educative content of philosophy, see *supra*, ch. XXIV, 1.

may confine itself almost entirely to the metaphysics of the ancients, for their development of speculative thought has been typical for all later periods. It is not difficult to show how metaphysics developed from the speculative thought that was originally more comprehensive and more or less lacking in form, and how its chief problems have gradually been evolved from the successive stages of this speculation. To the first of these stages belong the terms that Aristotle uses for this discipline in the beginning of his metaphysics: wisdom, *σοφία*, and theology, *θεολογία*—and these terms connect metaphysics with the thought of the previous periods. The sages sought a world-view to serve as a guiding star of life; the theologians sought an explanation of the world, which they based on intuitions and expressed in theogenies and cosmogenies. The philosophers took the further step of seeking to solve by inquiry and research the problems propounded by the oldest of speculative thinkers. They sought a rational explanation of the world, but their chief problem was the same as that of their predecessors: whence the world, whence plurality, whence the conditioned, the change, the genesis? Their predecessors had sought the answer in the deity; but they sought it in a principle endowed with unity, independent permanence, and true being. Upon this object both the Ionics as well as the Eleatics focussed all their attention; and the problem upon which the speculation concentrated, may be designated as that of unity and plurality.

Plato speaks of the problem as having been handed down from time immemorial, yet as still possessed of a wonderful charm. But he adds that it easily leads to an idle play of the fancy, especially in the case of the youthful mind, which arbitrarily collects and rolls into one, and, after having established a unit, tears apart what it has combined.[1] Plato breaks the circle: unit—plurality,—plurality—unit, by pointing to the middle members, *τὰ μέσα*, as which he represents the limiting or formative principle, *τὸ πέρας*, primarily in the sense of the Pythagoreans as measure, number, form. Hence the contrast is no longer between unit and plurality, but between form and matter. The view of the deity is no longer pantheistic, but becomes theistic. Before, philosophy was the search after the first principle; but now it becomes the science of the first principles, the *ἀρχαί*; and the examination of the first causes, the "first philosophy," *πρώτη φιλοσοφία*, another name for meta-

[1] Plato, *Phileb.*, p. 15d.

physics, is separated from the rest. In this way philosophy extends, at the same time, its investigations beyond the one problem. The form is recognized as being also a key to knowledge (εἶδος, form and concept) and a goal of one's striving, as the good and the end, and so the broad outlook of the first sages is regained. But it is not enough to lay down the first principles; they must also be defended. The practice of the Sophists and their specious dialectic developed from the idle play of the fancy. But to all this must be opposed the true dialectic, which proves that knowledge is possible and that being is real—a rational basis for the rational world-view. This is Plato's conception of dialectic, from which Aristotle separates logic, and thus the latter obtains the science of being as such, of the ὂν ᾗ ὄν, *i.e.*, metaphysics proper.

Each of these problems occasions a difference in basic principles and a parting of the ways of thinking. The problem of unit and plurality separates monism and dualism; and monism is again divided into Ionic materialism and Eleatic intellectualism. The problem of the middle terms occasions the differences between the Pythagorean science of measure and number, the Platonic doctrine of ideas, and Aristotle's teachings on the subject of form and end. In the conflict between the true and the false dialectic we see the Socratic realism opposing the Sophistic nominalism. The separation of metaphysics from dialectic brings out the opposition between the transcendental world-view and the immanent Aristotelian.

But the conflicts, oppositions, and divisions, which appeared in that early period (which was one of real achievement in philosophy), have been repeating themselves down the ages. The same problems are even to-day clamoring for solution with, one might say, the same natural force as at the time of the ancient Greeks, when there were intellectual giants on the earth. The metaphysicians of to-day are, like the ancient Greeks, confronted with the fundamental question: unit or plurality, monism or plurality of principles? And our youthful dialecticians are, like their Attic predecessors, incessantly collecting and rolling into one, and, after having established a unit, they likewise tear apart what they have combined. Our natural sciences as well as our jurisprudence are discussing the concepts of idea and end, and though they may for a time ignore the problem, yet it will gently, but irresistibly, press again into the foreground of inquiry. Diels says truly that the bombastic and inflated style of many would-be philosophers—who, though but

sounding brass and a tinkling cymbal, still turn the heads of the multitude—is reminiscent of the seductive charms of Gorgias' nihilism; and he justly adds, "Socrates, or rather his pupil Plato, has disclosed the hollowness of this vain show of wisdom and art; he has for all time exposed and confuted the hollow phrasemonger and the brutal superman."[1]

The weed springs up of itself, but the medicinal herbs must be planted. For furnishing the young with principles, for protecting them against the errors that are continually cropping up, there is no other means than to instruct them in the science of the first principles; and this instruction will be productive of the best results if it be correlated in a genetic way with the problems as they present themselves successively to the individual mind. In metaphysics, just as in astronomical geography,[2] the successive stages in the historical development of the science are repeated in the individual mind. And this circumstance combined with the typical simplicity and clearness of ancient metaphysics encourages the hope that this science can, despite its depth and other inherent difficulties, be presented in a way that will let it appeal to the young.

CHAPTER XLVI

Correlation of the Materials of Instruction with the Mental Horizon of the Pupil

1. The organico-genetic method has this advantage that it places the pupil at a point whence he may behold the beginning of a thing, its development, and its end. What precedes prepares for what is to follow, and thus the pupil recognizes the latter as a development of the former. With this method the course of study need not evoke a new act of assimilation for each new element of knowledge; for the method of instruction has aroused in the pupil's mind a progressive movement which saves his energy without, however, decreasing his self-activity. The organico-genetic course of study is like a guide who has taken hold of his companion's hand and conducts him quickly to a goal that is within sight. But there is no enforced following. There are no leading strings to interfere with the inde-

[1] *Sitzungsberichte der Berliner Akademie der Wissenschaften*, 1902, p. 237.
[2] *Supra*, ch. XLII, 6.

pendence of one's progress. But this self-activity is increased, if the guide—to keep up the simile—lets go the hand of his companion, because the latter, with the goal in sight, is so sure of foot as to need no further assistance. In other words, the developmental method of teaching should be dropped to let the pupil find knowledge by himself; or, in technical terms, the genetic method should be exchanged for the heuristic.

Between the organic view and the heuristic method there is also a historical connection. Both originated about the same time, though the heuristic method was, owing to its formal character, employed first. The method by which the pupil is taught to discover truths by himself, is associated with the name of Socrates, who designated it as the obstetric art of the mind (μαιευτική), because by it he elicited from others what was in their mind without their knowing it. Socrates induces the interlocutor to express his opinion on a certain subject, and places himself in the interlocutor's circle of thought; and the indefinite and hazy notions that he finds there he changes into definite views and convictions. Historically, however, Socrates did not employ the method for didactic purposes. Far from wishing to impart knowledge to others, he was himself but searching after truth, and hoped that by leading others to find it, he might find it himself. He had not yet learned to use the organic method, and he did not seek genetic series, but analytical series and partly also synthetical media; and his chief discoveries were definitions and generalizations. Plato was the first to develop, together with the organic world-view, the heuristic method; but the masterpieces of this method he generously attributed to his teacher. The Platonic Socrates is no longer searching after truth, for he has discovered the first principles and would lead others to understand in their light all that is given. He lets the interlocutor determine the point whence they will set out, lets him take the first steps, meet the first difficulties and conceive a longing for the solution. But all this while Socrates is himself directing the discussions toward a definite end, and the final solution proves a general principle of which the special problem under discussion is only an application. The searching gives place to the development, and the latter not infrequently concludes with an enthusiastic account of the truth beheld—the very reverse of skeptic search after knowledge.

Schleiermacher gives this happy characterization of Plato's heuristic method: "Its essence consists therein that, instead of proceeding from a fixed point in one direction, it begins in each

subject with a skeptic statement, presents, through intermediary points, at one and the same time, the principles and the specific materials, and combines them , as it were, by an electric shock... This method asures to science in all its parts the highest character of life, for its inner power will thus be felt to be present everywhere and will appear in each part of the presentation ever new and fresh."[1]

Aristotle gives the philosophical basis underlying the Socratic method: "All learning proceeds from lower values of knowledge to higher. It is the same process as may be observed in moral actions, where man proceeds from what is good from only an individual point of view to that which is good in itself and for all concerned. In the same way the knowledge that has been perceived individually, is converted into knowledge that is valid in itself. What one discovers by himself, is often of little value and possessed of little, if any, content of truth. Still, we must try to pass from such mediocre knowledge to absolute values of knowledge, and this we can do, as was said before, by connecting with these values."[2] Aristotle here has in mind not only Socratic dialogues, but a method that he frequently employs in his own investigations, *viz.*, to proceed from generally received views whose import is to be determined precisely and clearly. These views he compares to a target which is hit more easily than the bull's eye;[3] and the clarifying consists, then, in seeking the centre of the target. Thus in his ethics Aristotle starts out from the concept of happiness that is intelligible to all, and proceeds to establish the eudemonism based on rational actions. And in metaphysics he proceeds from the concept of being which has so many meanings, to the concept of a being that is uncreated, absolute, and perfect in itself—the deity. The process is analytic and heuristic: analytic, because it ascends up to a principle; heuristic, because it is correlated with the pupil's mental horizon.

2. With Plato and Aristotle the heuristic method is solely the form for the organic content. The littleness of that which the pupil can find by himself, is outweighed by the height of science and the sublimity of the principles. Plato's dialogues resemble in wealth of content the method of instructing by questions and answers employed by the oldest nations of the

[1] *Grundlinien zu einer Kritik der bisherigen Sittenlehre*, 1803, p. 478.
[2] *Metaph.*, VII, 4, 2; cf. V, 1, 2.
[3] *Ibid.*, II, 1, 2.

East and revived in the catechetical schools of the Christian era. But they are superior to this catechetical method in several points: in freedom of movement, in fullness, and in being correlated with the pupil's circle of thought, without, however, sinking to any mediocre arguing.

But this last danger was the undoing of the men who revived the Socratic method in the 18th century, for they conceived the problem purely externally, and were satisfied with producing such dialogues between teacher and pupil as either contain nothing, or at least lead to no discovery of truth, because the questions were merely suggestive. The nominalistic tendency of the Enlightenment was so strongly opposed in principle to Plato's philosophy as to borrow from it nothing else than a meaningless and empty form. And such the Socratic method of the Enlightenment was indeed: naught but an insipid analysis whose outcome could not but be insipid also, and it is this abuse which has discredited the very name of the heuristic method (so that, for instance, among American teachers the term inductive is more generally in use than heuristic). Pestalozzi, however, put an end to this abuse by recalling the value and importance of the synthetic method. His opinion of vacuous Socratizing is the best criticism of it: even the hawk and the eagle can take no eggs from the nest if none have been laid.[1] Still, the heuristic method, applied according to Aristotle's rules, is an essential instrument of the art of teaching and a necessary supplement to the thetic and dogmatic method. We must treat it here, because it is of importance, not only for didactic technique, but also for the didactic formation of the course of study.

When applying the heuristic method, the ancients sought the comprehension of a truth, not an increase of knowledge as such, and in instruction it would, therefore, seem applicable, in the first place, to the rational elements and best adapted to serve as a form of explanatory and developmental instructtion. But looked at more closely, it will be seen that the heuristic method is also related to the empirical and the technical elements,[2] for what we find may also be an empirical content or an application. In the first case the discovery is, strictly speaking, but a rediscovery; but to have a thing does not preclude the finding of it, just as one can learn what he already knows. Aristotle

[1] *How Gertrude Teaches Her Children*, transl. by L. E. Holland and F. E. Turner, 2nd ed., Syracuse, 1898, p. 87.

[2] *Supra*, ch. XL, 3.

says, "All instruction and all conscious learning is based on knowledge previously possessed;" and consequently he admits that we can learn what we already know. "There is nothing to prevent that we should in a certain regard already know what we are learning, though in another respect we do not know it... There is no contradiction in learning what we already know under one aspect. This alone is a contradiction, to know a thing already just from that point of view from which one would only now learn to know it."[1] To apply the heuristic method to empirical materials, the teacher must direct his pupils to find these materials in their own circle of thought. This procedure we have met elsewhere, and have there designated it as purely analytic.[2]

3. It is Herbart's achievement to have developed this form of the heuristic method under the name of analytical instruction. According to him, the "term analytic may be applied, wherever the pupil's own thoughts are expressed first, and these thoughts, such as they chance to be, are then, with the teacher's help, analyzed, corrected, and supplemented... There are analyses of experience, of facts learned in school, and of opinions.... Left to itself, experience is not a teacher whose instruction is systematic. It does not obey the law of actual progress from the simple to the complex. Things and events crowd in upon the mind in masses; the result is often chaotic apprehension. Inasmuch, then, as experience presents aggregates before it gives the component particulars, it becomes the task of instruction to reverse this order and to adjust the facts of experience to the sequence demanded in teaching. Experience, it is true, associates its content; but if this earlier association is to have the share in the work of the school that it should have, that which has been experienced and that which has been learned must be made to harmonize. With this end in view we need to supplement experience. The facts it has furnished have to be made clearer and more definite than they are, and must be given an appropriate embodiment in language."[3]

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[1] *An. post.*, I, 1: Πᾶσα διδασκαλία καὶ πᾶσα μάθησις διανοητικὴ ἐκ προϋπαρχούσης γίνεται γνώσεως κ.τ.λ.

[2] Ch. XLI, 4.

[3] *Outlines of Educational Doctrine*, transl. by A. F. Lange, New York, 1913, p. 106, and pp. 110-111 (§ 106 and § 110).

In his *Allgemeine Pädagogik* Herbart had outlined an analytical course of instruction beside the synthetical;[1] but later he confined analytical instruction to introductory and explanatory matters. Ziller would restrict analytical instruction to the function of preparing for the synthetical; and, going successfully into details, he demonstrates that it is the best means for reconciling the demands of many-sidedness and individuality, because by it all that has been assembled through experience and intercourse in the mind of the individual, is elaborated and correlated vitally with a properly co-ordinated circle of thought.[2]

This brings the subjective side of the problem into the foreground. Analytical instruction, as conceived by Herbart and Ziller, occupies a middle position between that part of the circle of thought which is the product of experience and intercourse and that other part which is the product of synthetical, or more correctly of thetic, instruction. Thus there is no longer any danger lest the two parts should remain disjointed and thereby prevent the unity of the mental operations.

4. This subjective view, however, must be supplemented by the objective, based on the materials of instruction. Part of what is presented in instruction is already known to the pupil, and hence not all that is taught is really learned. If the teacher ignores this obvious fact, the pupil will regard as unfamiliar what he already knows. And this will involve, not only a waste of energy, but also the loss of that mutual influence between the known and the unknown, the familiar and the unfamiliar, which is one of the chief incentives to study. If, on the contrary, that which is already known be treated as such, there will be an opportunity for correlating the new and unfamiliar materials with the knowledge already possessed by the pupil. The pupil will then appreciate what he already knows, and will employ it as an aid in acquiring new knowledge.

This statement of the problem puts us in a position to understand the relationship between analytical instruction and the heuristic method, which relationship can not be understood in case it be a question merely of elaborating sense-representations. But to make an actual find is essential to analytical instruction, for without it there would be but empty playing. For this

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[1] *Science of Education*, transl. by H. M. and E. Felkin, London, 1892, pp. 170 ff.

[2] *Grundlegung*, § 19, pp. 450 ff.

reason, and to bring out at the same time its difference from the analytical method, as described above,[1] we shall call it analytico-heuristic instruction. We might also call it empirico-heuristic instruction, since the discovery or the re-discovery of an empirical element is an essential factor, and this empirical element is, as a rule, made the object of an analysis.

In contrast to this instruction we have a form of instruction called synthetico-heuristic, whose object, in accordance with the two other factors of reception, is to find partly cognitions and partly applications, and which is, therefore, subdivided into logico-heuristic and technico-heuristic instruction. There will never be more than limited opportunities in instruction for finding concepts, propositions, and conclusions; and the work of finding these must never leave the proximity of the empirical materials. Yet it would be unfair on this account to underestimate the value of the synthetico-heuristic method or to restrict its field of application. There are more opportunities than is commonly supposed for letting the pupils increase their knowledge by themselves. The teacher rarely breaks off at the proper time in his thetic presentation to allow an opportunity for the heuristic process to be called into play. But he should ever follow this maxim: Never tell the pupil what he can tell himself; never give him what he can find himself. All learning puts the mind into a receptive attitude and unavoidably impedes its self-activity, and there is great danger of the receptivity degenerating into passivity. Hence, the teacher should, whenever possible, change the receptive attitude into vigorous self-activity. The application of theoretical knowledge should counterbalance receptive learning. But the activity that springs from the very reception, especially if it be, unlike too many applications, rich in content and, therefore, rich also in results, is undoubtedly more desirable.

5. The application has this advantage over the other steps in the assimilation of knowledge that it involves the pupil's self-activity, and all exercises are, in a measure, of a synthetic character and forms of heuristic instruction. But the making of an exercise results generally in an increase, not of knowledge, but of skill, and this is the usual purpose of school exercises. School exercises are, therefore, heuristic exercises only if they result in an increase in knowledge. Such exercises are, for the most part, not assigned by the teacher, but present themselves

[1] *Supra*, ch. XLI, 2 ff.

spontaneously by growing either out of the instruction or out of the pupil's circle of thought.

While analytico-heuristic instruction correlates the materials of instruction with the pupil's circle of thought, the application correlates them with his circle of interest. Exercises that seem, because of their content, to be of small value, may in this regard prove very effective, if they chance to correspond with some awakening interest. Such are questions and suggestions that will occupy the pupil beyond the class periods and influence his recreations and games, and thus add so weighty an element to activity as counterbalances more than anything else the effects of a purely receptive attitude. The method of instruction that secures the co-operation of the spontaneous interests, is the counterpart of analytico-heuristic instruction. The latter correlates the teaching content with the pupil's circle of thought, and the former correlates it with his circle of interest, and both combined correlate it with the whole of his inner activity. No thought was formerly given to correlating the materials of instruction with the pupil's circle of thought, but there was much attention given to make them correspond with the spontaneous interest. The school festivals of the Middle Ages, the dramatic entertainments of the Humanists, the so-called academies of the Jesuit colleges—all served this latter purpose. And in this as in so many other cases, we should revive—with a due regard, however, to changed conditions—the customs of our forbears.[1]

The application of the heuristic method must be considered in outlining the course of study as well as in didactic technique. But we shall here consider it only in its bearing on the curriculum, reserving the other aspect for later treatment. There are certain branches whose matter is, in the main, not new and hence needs only to be elaborated, while in other branches the heuristic element is important enough to affect the whole field of study so as to call for consideration in connection with the didactic formation. But in a third class of subjects the heuristic element occurs so rarely that it can be left to the discretion of the individual teacher, *i.e.*, to didactic technique. We shall here deal only with the first category of studies, among which we find the elementary instruction in the mother-tongue, mathematical form study, and geography.

[1] For suggestions how this can be done, cf. Kirsch, *Thoroughness in the Teaching of Language, Cath. Educational Review*, May, 1913, pp. 398 ff.

6. The mother-tongue is familiar to the pupil; its laws and rules govern his speech, though he is not aware of it. It is the function of instruction to complete this half-knowledge and make it conscious. This is done thetically when a foreign language is made the subject of instruction, and the forms and inflections of this language are then the fixed points around which the respective equivalents of the mother-tongue assemble, so that little more need be done to bring home to the pupil the structure of the latter. Though this road is actually a roundabout way, it is not so easily missed as the other, that of the heuristic method, which makes the mother-tongue the direct object of study, so that the pupil is taught to attend closely to his speech. This method—to use a comparison we employed before—demonstrates language like a machine in operation.[1] The pupil's language consciousness is the source of knowledge; spoken sentences must be the object of analyses, comparisons, and generalizations; and grammatical categories must be developed successively on the ground of the material that has been thus obtained. This method, it is true, is more attractive than the thetic. But the teacher who would adopt it, must consistently apply the underlying principle throughout and must beware of zigzagging between the two methods; for this would lead the pupil to believe that nothing new was to be learned, that there was nothing in his mother-tongue that he did not already know.

To illustrate the difference between this false procedure and the heuristic method, we shall take the treatment of the subjunctive in English. It would be wrong to proceed from the verbs whose subjunctive form differs least from the indicative. To apply the heuristic method we must, on the contrary, select a verb which shows strikingly the difference in the forms of the two moods. In order to bring home the idea that the indicative has a variant—and as such the subjunctive must be conceived—we should place side by side, not: *I praised—if I praised*, but rather: *I am—if I be*, *I was—if I were*, and other forms that exhibit, like these, obviously different formations. These forms should naturally be taken from sentences, and preferably from such as let one conceive the indicative forms as parallel. Indirect speech, which employs both the indicative and the subjunctive, is best adapted to this purpose. Consequently, the transposition of direct speech into indirect furnishes the basis for obtaining the subjunctive.

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[1] *Supra*, ch. XVII, 5.

7. Like grammar, mathematics meets with unconscious knowledge and skill in reference to the relationships of magnitude. The heuristic method must introduce, step by step, what is unconscious into the consciousness. Here, too, a more simple method may be adopted: that of letting the pupils operate freely with the known relationships, and this will prepare for the full comprehension of the relationships of magnitude. Especially in the case of forms of bodies is it advisable to have them drawn or represented in other concrete ways. Thus the way will be prepared for the study of geometry. The teacher will obtain still better results by giving systematic explanations about the forms of bodies represented by the pupils. This combination of the technical with the theoretical is the characteristic feature of form study.[1] Form study is heuristic in nature, and this fact should never be lost sight of. It should be neither elementary nor thetic, though geometrical objectivation generally has both these qualities. Form study should train the pupils first to make and observe forms of bodies and then to express in words the results of their observations. It should deal partly with such forms as present, because of their regularity, few, if any, difficulties—as the square, the circle, and symmetrical figures of all kinds—and partly with such as will, because of their variability, hold the attention for a longer time—as angles with revolving sides, figures with sliding sides, etc. The works of nature and art have different figures and so will occasion a different kind of search and discovery.

8. There are two considerations which should encourage the application of the heuristic method to geographical instruction. The first is the circumstance that home geography should, as we recommend, precede the geography of the world at large. Home geography is here understood to embrace all the accessible environment of the pupil; and this environment may prove to him a valuable source of geographical data and concepts, which should not be lost amid the wealth of the subject-matter of geography. What the pupil can perceive with his senses, may be made, on the one hand, the point of correlation and, on the other, the point of comparison. In geographical instruction the following questions must ever be at hand: What is the relationship between the respective foreign country and us? What were the relations formerly? What objects of our environment have been

[1] *Supra*, ch. XXXVI, 4.

imported from that country? What products do we furnish to this country in return? How do we get there? How could we get there? and so forth. A second series of questions suggests the comparison of home and foreign conditions: What have we in our home town to illustrate what we have learned of foreign conditions? Is there anything in our present environment to assist the imagination in picturing foreign conditions? Is there anything familiar to us that might serve to explain this or that foreign custom that appears so strange to us?

These and similar questions should never be omitted in geographical instruction, and hence they belong not only to didactic technique, but also to the course of study. The discussions resulting from them are introductory and should be followed by the subject-matter proper, primarily by the map, because it visualizes so much geographical knowledge. This is the second opportunity for applying the heuristic method: the map is to be made a source of knowledge. At present, the map is used merely for verifying the statements of the textbook; it is considered only of secondary importance, whereas it ought to be the primary instrument of instruction; and the pupil should be trained to glean from it as much knowledge as possible, so that the descriptive text would be merely supplementary. Peschel says: "Maps are philosophers' stones, and so if the philosophers be missing, they are naught but stones; they are symbols which speak to us in words full of mystery, and hence it should be the chief duty of the teacher of geography to ensure a clear understanding of their symbolical language." It is on the same grounds that Sydow demands that the teacher make his "pupils read and explain the map; the teacher's questions must be methodical, so that the reading and explanation be correct.... The nomenclature of the map should not be taught dogmatically, but the pupil should learn to find the terms on the map, and thus he will be obliged to interrelate the terms with the concepts obtained from the drawing of the map."[1]

The same viewpoints that govern the reading of a text by virtue of its organic nature,[2] should govern the study of maps. What can be read from the map should not be drawn from another source; but what must be drawn from other sources, should be correlated as closely as possible with what is given. The parallels running through a country allow us to infer facts

[1] Schmid's *Enzyklopädie*, IV, p. 150, footnote.

[2] *Supra*, ch. XLIII, 4.

about its seasons. Its meridians allow us to compare its day time with ours. From the degrees of longitude and latitude we can figure out the size of the country. The hatching or coloring indicates the relative altitudes. From the elevation and lay of the valleys one can infer their probable temperature. The grouping of the cities shows the lines of trade and commerce; and it is interesting to learn from the map what influences the rivers and mountain ranges had on the divisions of a country. From the place-names we can conclude what race or races inhabited the country. Thus the place-names on the map of Spain are either of Roman, or Germanic, or Arabic origin; and the place-names of England reveal an analogous historical stratification.

Historical maps admit of a similar application of the heuristic method. And by making proper use of such maps, historical instruction not only obtains a solid basis, but can also economize by saving the time now spent in imparting that information which could easily enough be gleaned from the map. We shall illustrate this by an example, in chapter LII.

IV

DIDACTIC TECHNIQUE

CHAPTER XLVII

The Educative Process of the Individual

1. The organization of the content of education and the didactic formation of the subject-matter of instruction are only indirect factors in the educative process and must be supplemented by the personal element of the teacher, *i.e.*, by the didactic technique. The Latin proverb says, "*Viva vox alit plenius.*"[1] Indeed, only the living voice can impart the full mental food, because it gives to the dead material something of its life. It is only when a living person is actively engaged in transmitting the intellectual treasures of the race that the corresponding faculties of the young are called into being and into active co-operation. Without a teacher the course of study is only a score without an orchestra, a digest of laws without a judge.

The didactic technique deals with the learner and with the details of the content of teaching; and this relationship determines the twofold scope of our inquiry. We must, on the one hand, treat the educative process of the individual as the field or domain of the didactic technique, and, on the other hand, examine how the principles laid down for the course of study are to be applied to the smaller didactic units, *viz.*, lessons, daily tasks, and exercises. Each of these two subjects should be treated, first, in a general way, and then, in detail. But the educative process of the individual may be treated partly with regard to the stages of his development and partly with regard to his individuality, *i.e.*, with regard to the differences in ability. The second field may be specialized with regard either to the branches of study or the forms of instruction (presentation, explanation, development, etc.). It is impossible for us to treat in this work all these phases of the subject, and we shall content ourselves with treating the educative process of the individual in general, the psychological and logical elements of the didactic

[1] Quint., *Inst.*, II, 2, 8.

technique, and the articulation of the content of teaching. Of the forms of instruction we shall deal with presentation and explanation only, as these two are of special importance because they establish a relationship between the science of education and allied sciences: presentation establishes a relationship between the science of education and rhetoric and poetics, while explanation establishes a relationship between the science of education and hermeneutics or exegesis. By a few examples we shall illustrate the different forms of instruction, and demonstrate, at the same time, how the instruction should be individualized with regard to the different age periods of the pupils.

2. Three factors must correspond on the part of the pupil to the teacher's endeavors, and these factors Aristotle described as the three conditions essential to moral education: natural gifts, habit, understanding.[1] In our present inquiry, the first element is the natural talent of the pupil and his instinctive longing for knowledge and learning; the second is the habituation to mental activity, diligence; and the third is the understanding, the appreciation of the value of educational efforts. In the first element we recognize the unconscious motives of education; and in the second, the conscious motives.[2] Though we had occasion in ch. II, 3, to touch upon habit, we can only now inquire more fully into its meaning. It is interesting to note that the three stages in the development of the young correspond to the three elements just mentioned. For the first stage the instinctive impulse and spontaneous longing for knowledge are most important; the habit of persevering application is needed most in the middle stage; and in the last stage the understanding of the value of education must elicit new efforts.[3]

The natural talents, the first requisite for study, imply more than a vacuous adaptibility, for they are related to the intellectual treasures to be imparted, and, in a measure, correspond to their varying forms. Every human being is born into a definite sphere of civilization and culture. He is by nature equipped, not only with natural, but also with cultural, dispositions. Through heredity he may receive what his ancestors have acquired by dint of labor and exercise. This is true of

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[1] Aristotle, *Pol.*, VII, 12, 6; ἀγαθοί τε καὶ σπουδαῖοι γίνονται διὰ τριῶν. τὰ δὲ τρία ταὐτά ἐστι φύσις, ἔθος, λόγος. Diogenes Laertius enumerates them in a different order (V, 18): τριῶν ἔφη δεῖ παιδείᾳ φύσεως, μαθήσεως, ἀσκήσεως.

[2] *Supra*, ch. V, 3.

[3] Ch. XXXIX, 5.

the national type and of all congenital tendencies traceable to the efforts of previous generations. Tertullian could, for instance, describe the soul as "*naturaliter Christiana*," not in the sense of its being possessed of innate ideas, but as being by nature ordained and adapted to receive the truths of Christianity.[1] The instruction transmits, indeed, a positive content of faith, knowledge, and skill. But the mind is not merely receptive and passive, but is, as it were, naturally in the attitude of inquiry and research; and the inner agreement following upon the acquisition of any truth shows that an answer and a solution have been found. The attitude of inquiry and research admits, because of the innumerable individualities among men, of endless varieties.

The instinctive longing for knowledge admits likewise of different degrees. The lowest degree is that of the mind which, though offering no opposition to the imparting of knowledge, yet remains purely passive. The highest degree is that of the genius who seizes or creates for himself, with instinctive certainty, all the elements that are homogeneous to his own mind. Between these two extremes there are many different stages of varying intensity—from the mere inclination to the persistent longing for knowledge and the love of study. The ancients declared love to be the best teacher and the most efficient schoolmaster;[2] and they warn us not to let force take the place of love, because, as the Pythagoreans first expressed it, a statue of Hermes can not be made out of every kind of wood. Modern pedagogy has substituted a somewhat weaker term for the love of the ancients. It speaks of interest as being the force to be applied in the educative process. This interest, or, to be more exact, the direct interest, the interest in knowledge for its own sake, regardless of any usefulness of it, also admits of various stages. The lowest stage is the merely passive interest, found in the purely receptive attitude; and the highest stage is the interest that is responsible for the active developing and elaborating of what has been received. Interest has been the chief object of Herbart's inquiry, and, though we can not follow him in accepting it as the first principle of the science of education, we appreciate the new light that his investigations throw upon the subject.

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[1] Vol. I, Introduction, I, 3.

[2] *Supra*, ch. VI, 1. Cf. also these proverbs, "*Amor docet artes*"; "*Nihil difficile amanti.*"

3. Amid the multiplicity of interests we may distinguish three main kinds: the empirical, the speculative, and the form-giving or the technico-æsthetical.[1] Though Herbart was the first in so classifying the various interests, Aristotle had noted the same differences, for he tells us that among those who attend the lectures on philosophy, there are three kinds of students. Some, he says, wish to have everything treated with mathematical precision; others desire to have the abstract matter illustrated by concrete examples; while a third class find most satisfaction in hearing passages quoted from the poets in support of a statement.[2] Herbart's three kinds of interests are founded on differences existing in the intellectual content, for they correspond respectively to the empirical sciences, the rational sciences, and the arts. The related tendencies of the human mind can be traced back to the series of the psychical functions.[3]

It is the function of instruction to feed the instinctive impulse for learning, to intensify it, to direct, and, if needs be, to correct it, and thus to administer and increase, one may say, the capital that the native instinct represents. The organization of the whole content of education, the arrangement of the course of study, and the didactic technique should all co-operate to the same end. The teacher should on this point, as on all others, allow full scope to the personal element. He must preserve the strength and spontaneity of the native instinct. He should not discourage the activity springing from it; and his own interest should quicken the interest of his pupils.

The didactic ability of the teacher is here put to a severe test. Since he must of necessity continually repeat the same materials of instruction, these lacking novelty will grow less interesting to him: *Occidit miseros crambe repetita magistros.*[4] But there is a love for the things taught which wards off this danger, and which is not far removed from that love which teaches us "to be little with the little ones," and this love will never tire of what has been said a thousand times; just as we never tire of showing others a landscape with the beauties of which we have grown familiar.[5]

The teacher has the further duty of acquainting himself with all those phases of the curriculum and of its single branches that are calculated to quicken the direct interest, for without this knowledge he can not stress these phases for the purpose of

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[1] *Supra*, ch. XI, 5. [2] Aristotle, *Met.*, II, 3. [3] *Supra*, ch. XL, 3 ff.
[4] Juvenal, VII, 154. [5] *Supra*, ch. XXV, 2.

enkindling a deeper interest. The course of study, if properly adapted to the different stages of mental growth, will take into account the different interests awakened in the different periods of the pupil's development.[1] In this connection the proper arrangement of the course of study will produce two very important results. It will, first, insure the correlation of the materials of instruction with the pupil's circle of thought and interest, and will thus render possible their full assimilation; and this in turn will let the pupil feel the joy and the vital interest with which man seizes and treasures what is his own. It will, secondly, result in the harmonious and internally connected curricula which are rendered possible by the organico-genetic principle, and which elicit interest and hold it permanently. An internal relationship and a steady and natural development are as helpful in this respect as a disjointed and fitful treatment is harmful.

But the didactic formation must be supplemented in both respects by the didactic technique. The organico-genetic principle must be applied intelligently down to the smallest details. It is not enough that it govern the whole, namely, the course of study, because it is not the whole upon which the pupil's attention is focussed. It is with the parts, with the details, that the pupil is primarily concerned; and it is in and through these details that the teacher must bring out the truth, that the organico-genetic principle is the governing factor, for only in this way can the pupil be familiarized with this principle. The teacher must do still more when correlating, by means of the heuristic method, the materials of instruction with the pupil's circle of thought and interest; for in this case the individual element is the determining factor. When outlining the course of study, one can determine only in a general way what the pupils can find for themselves, and, as a rule, less will be expected of them than they could accomplish. Hence it must be left to the tact and discretion of the individual teacher in direct contact with the individual pupils so to apply the heuristic method, that it will evoke the self-activity of his charges in method, that it will evoke the self-activity of his charges in such a way as will reward the search with real and substantial finds.

4. The interest may be compared to the pendulum of a clock, which produces its movement; and the habit of persistent application is then like the weight which keeps up and regulates

[1] XXXIX, 5.

the movement. Love of study and diligence go together, and by reason of their mutual influence, they are indispensable to each other. In the Latin *diligentia*, persistent application is named after the love, and so we have the two concepts united in our English tern diligemce. The love for a thing may not grow cold in the face of difficulties, and the impulsive eagerness of the first start must grow to steady and persistent progress. If love be the best teacher, then the *labor improbus* is an invincible hero, especially if it be at the same time persistent. Hence the conditions making for success in study can be summarized in this series: *amor*, *labor*, *tenor*.

Strength and work belong together. Take away the element of work, and your strength will change to weakness or will be wasted on futile efforts; but use your strength, and your strength will increase. Still the strength and the work should be duly proportioned to each other. If the instruction should habituate the pupils to mental activity, it must be neither too easy nor too difficult. If too easy, it can give no foretaste of the seriousness of learning, which seriousness is essential to study, for all study is difficult, and studying is not playing.[1] If the instruction is too difficult, the pupil will be discouraged and will, perhaps, lose all interest in books. Older educational practices paid no heed to the question of lightening the work of learning; and this neglect was a favorite point of attack during the Enlightenment. But the educationists of the latter period went to the opposite extreme of reducing the work of the school to mere playing, and in their endeavor to remove all difficulties, they sacrificed even the educational content. While not going the length of their abuse of a good principle, the teacher should empoly all legitimate methods to lighten the work of study.

All habituation is constant and is productive of constancy, and constancy is a condition of diligence, as the old saying has it, "*Dies diem docet.*"[2] This saying embodies a further truth: day follows upon day in regular succession, and one is the teacher of the other, but to each is assigned its own particular task, its own pensum.[3] Similarly is the work of learning connected,

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[1] Aristotle, *Pol.*, VIII, 4: οὐ γὰρ παίζουσι μανθάνοντες, μετὰ λύπης γὰρ ἡ μάθησις. *Litterarum radices amaræ.*

[2] Another saying of the schools is a variant of a familiar proverb: "*Gutta cavat lapidem, non vi, sed sæpe cadendo: Sic homo fit doctus, non vi, sed sæpe studendo.*"

[3] "*Nulla dies sine linea,*" is a saying attributed to Appelles (Pliny, *Hist. nat.*, 35, 10). Later it was known in this enlarged form, "*Nulla dies abeat,*

though at the same time it is articulate and consists of complementary parts, systematically interrelated with one another. This articulation is also a condition of diligence. The studies are to appear to the pupil, not like an immense field whose end is lost in the distance, but divided off like garden beds. We are as much discouraged if the end of our labors is not in sight as when the tasks imposed are beyond our strength. To be inviting, the work must be presented as performable in parts, so that the pupil may have the satisfaction of having reached certain goals which he recognized as such from the start. Goethe says, "It is not sufficient that one be taking steps in the direction of a certain goal. Each step should be a goal in itself."

As all interest is contagious, so the teacher's interest will awaken a kindred interest in his pupils. And as diligence is contagious, so the teacher's diligence will be an inspiration to his pupils. The teacher's painstaking and conscientious care will call forth the same virtue in his pupils, and no art of teaching can atone for its absence.

Interest and diligence assist each other. Where there is interest, there will be some degree of enthusiasm, and this may develop into diligence. Pursue any study diligently for a time, and you will find that you are becoming interested in it, merely because it has been the object of intensive mental activity and has become your intellectual possession. Therefore, the teacher need not be over-solicitous in small matters whether the subject will interest his class, and much less should he ever, for the sake of winning their interest, shorten or even omit altogether the dry-as-dust preliminaries of any branch. The latter are like the outworks of a fort which must be taken with one quick attack. Here diligence must precede interest, and later, in the quiet course of work, they will be reunited.

To keep his pupils both diligent and interested, is an important duty of the teacher; but the more gifted of his charges will at times render this duty particularly difficult. A pronounced interest in any single branch is often accompanied by a corresponding lack of interest and, therefore, also of diligence, in other subjects. The interest is one-sided, whereas it should, like diligence, be all-embracing. The increasing interest will demand too much of the pupil's time and energy, while each subject ought to receive its proper share of both. In order to

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quin linea ducta supersit." Concerning the term *pensum*, see the footnote to ch. X, 3.

reëstablish the proper proportion of attention to be given to the different branches, teachers not infrequently forbid a pupil to pursue his favorite study; they forbid him to ride his hobby. But the effect of this policy is often that the pupil loses his interest, but does not recover his former diligence. If the course of study were arranged to bring out the inner relationship of the different branches, it were easy so to direct any new interest of the pupil that it would spread along different lines and thus enjoy a wholesome development without being isolated.[1] It will prove helpful to appeal also to the pupil's understanding.

5. The understanding or the appreciation of the value of education, the third condition of the educative process of the individual, can be expected only of more mature pupils, because it is itself a product of education. The pupil must have been led by the hand for a considerable distance before he can realize this truth: *Tua res agitur;* and only after he has grasped this, can he take any independent steps. But it is not any and every evaluation of education that is desired, but only that appreciation which values education at its true worth; and hence we might recall what has been said on the motives of education (ch. I, ff. and ch. VI, ff.).

To look upon education as the development of God-given faculties for the purpose of fitting one to carry out the work assigned by God—that is the highest concept of education and the noblest educational aim. Every higher view of education can be reduced to the view just stated. This is true, for instance, of the view which prizes education for forming one's inner nature as well as of that other opinion which says that our country and human society as such have claims upon us, which we can not discharge without being masters of a certain amount of knowledge and a certain degree of skill. To regard education merely as a stepping stone to higher things, as a preparation for a trade or profession, is a purely utilitarian view and harmful to the direct interest in knowledge for its own sake.

But the lowest and most harmful of all evaluations of education is to evaluate it solely as a means for obtaining the rewards that are meted out in school: marks, premiums, distinctions, good reports. This low view kills the direct interest and is incompatible with any proper conception of education. Its baneful effects are most noticeable in the spirit of instruction, because it fosters low and vile motives. When using the

[1] *Supra*, XXXVI, 2.

competitive system, the teacher should remember that he is using poison. Poison, if taken rarely and judiciously, may be medicine; but taken daily, it will destroy the most robust constitution. If the pupil is in all his studies haunted by marks, reports, premiums, the poison has already entered his system.[1] But what of that class where half of the pupils have made charts for themselves to record scrupulously the points scored by each and every pupil for each and every bit of work performed? In such a field the weeds are consuming all the nourishment of the soil, and the seed of teaching can not germinate there. It were better to have no evaluation whatsoever of education than such a false one. In such a school, if anywhere, there is assuredly need of imbuing both teachers and pupils with the moral conception of education—a point which was treated at some length in ch. VI, 2.

The interest acquires stock, the application capitalizes it, and the understanding administers it. The ancients compared interest to the honey bees, and, keeping the figure, we may liken diligence to the builders in the bee-hive, while the queen bee, being representative of the order and co-operation of many forces, performs a task similar to that of understanding in education. After a man has outgrown the years of schooling, he must persistently apply himself to the work of his profession, which is then the object of his diligence. But he should never give up his interest in studies, for this will prevent him from growing narrow; and his understanding, when in its maturity, should reconcile his vocational and cultural duties, his work and his recreation.[2]

CHAPTER XLVIII

The Psychological Factors of the Didactic Technique

1. To illustrate concretely the general functions implied in the concepts interest and diligence, it will be well to connect these two terms with the formal steps of the assimilative process, *viz.*, reception, comprehension, and application. We shall then obtain these imperatives: The instruction should be such that the pupil will receive with interest the content of teaching, that he seek the comprehension with interest and diligence, and

[1] Cf. *Successful Teaching*, New York, Funk and Wagnalls, 1909, p. 34.
[2] *Supra*, ch. VII, 2.

finally that he be diligent in applying what he has comprehended. A popular German saying puts it thus: *Pass auf, fass an, denk' nach, schau' zu* (pay attention, grasp it, think on it, observe). If we apply these imperatives to the various phases of the educational content, we shall obtain the directions for treating the details of the materials of instruction, which matter will be treated in ch. L. But if we examine the imperatives from the viewpoint of the pupil, we shall note a series of psychical functions, namely, attention, apperception, memory, and skill; and these we shall now examine.

Herbart was the first to examine attention and apperception with regard to their bearings on instruction, and we shall the more readily follow him as we must make only a few changes to eliminate from his teachings on the subject the nominalistic character and so bring them into agreement with our fundamental principles.

Attention is, according to Herbart, "an attitude of mind in which there is readiness to form new ideas."[1] Pupils are attentive, if their "ideas rise spontaneously," for then the lesson has won their interest.[2] Attention is partly primitive or original and partly apperceiving. The ideas that are in the minds are important factors in the apperceiving attention: "From within ideas are suddenly bursting forth to unite with whatever similar elements present themselves."[3] Apperception, in general, is based on the fact that weaker ideas, which enter into consciousness, act as excitants upon the masses of concepts in the mind and are received and appropriated by them (apperceived).[4]

The first point on which we must differ with Herbart is in determining what increase the mind is to receive through attention. We hold this increase to be one, not of ideas, but of knowledge, ability, understanding—in short, an increase in intellectual content. Furthermore, we maintain that the attentive and apperceiving subject is not the idea, but the mind as such which uses the ideas merely as instruments. In so far we employ the term apperception in its older meaning, when it signi-

[1] *Outlines of Educational Doctrine*, transl. by Alexis F. Lange, New York, 1913, p. 62; cf. Herbart, *A Text-Book in Psychology*, transl. by Margaret K. Smith, New York, 1891, pp. 30 ff.

[2] *Ibid.*

[3] *Outlines*, p. 67.

[4] *A Text-Book in Psychology*, l. c.; cf. Karl Lange's able monograph on *Apperception* (transl. by the Herbart Club and edited by De Garmo, Boston, 1911). The rich material contained in this book can easily be arranged according to the viewpoints outlined in the present chapter.

fied the union of all psychical acts established in the self-consciousness. However, we should like to approach the Herbartian usage of the term in letting apperception signify—in accordance with its etymology—that activity which perceives something in addition to what is already in the mind, *i.e.*, the co-operation between the reception and the reproduction of intellectual contents. For this activity a technical term is indispensable in the science of education.

2. Herbart says that the primitive attention depends primarily on the strength of the sense-impression. But a middle course should be chosen, because the sense-impressions, if too strong, quickly blunt the receptivity. Hindrances to attention are, on the one hand, the presence of ideas contrary to the new representations to be mastered and, on the other hand, the accumulation of ideas supplied by instruction itself. Hence Herbart enumerates the following four essentials for primitive attention and also for instruction: strength of sense-impression, economy of receptivity, avoidance of harmful antitheses to existing ideas, and delay until the aroused ideas have recovered their equilibrium. Herbart points to the classic writers as being models in meeting these requirements: "They seldom take leaps and never stand entirely still; their method of unfolding consists in a scarcely perceptible, at any rate an always easy, advance; they dwell, indeed, long on the same thought, but nevertheless achieve, little by little, most powerful contrasts."[1]

"When the apperceiving attention is once under way, it should be utilized and not disturbed. The teaching must take the promised direction until it has satisfied expectation. The solutions must correspond clearly to the problems. Everything must be connected." Extraneous matter and ill-placed ornaments must be avoided; but that which is too simple must also be avoided, for in this case the apperception is soon completed. "The fullest unit possible is to be sought. A rule of vital importance is that, before setting his pupils at work, the teacher should take them into the field of ideas wherein their work is to be done. He can accomplish this at the beginning of a recitation period by means of a brief outline view of the ground to be covered in the lesson or lecture."[2] The primitive as well as the apperceiving attention is involuntary and opposed to the voluntary attention, which depends on a resolution. The voluntary attention can be secured through habituation; and to

[1] *Outlines*, pp. 64 ff. [2] *Outlines*, p. 69.

increase it in all cases where the pupil begins his work not entirely without compulsion, it is important that he should soon become aware of his own progress. Consequently, "the several steps must be distinctly and suitably pointed out to him; they must at the same time be easy of execution and succeed each other slowly; the instruction should be given with accuracy, even strictness, seriousness, and patience."[1]

3. We treat attention as interested reception, and thus obtain a further principle for dividing it; for the interest accompanying the reception may be either direct or indirect. Herbart's rules govern the direct interest, and should be observed chiefly in presentative instruction. But the indirect interest must be awakened in the instruction in the arts, for here the details generally appear void of interest; yet they can be made interesting by showing their usefulness or value as means to an end. It is an important rule for the instruction in the arts (*Fertigkeiten*)—to which technical grammar and practical mathematics also belong—that what is uninteresting in itself be made interesting by showing how it can be put to some useful purpose. If the teacher premises such work with the remark, "We shall need this very much; it will prove very useful later on," and thus allows his pupils an occasional glimpse of the usefulness of a certain subject, he will often have the pleasure of winning the full interest of his class in the driest details. True, there is the danger in this practice of accustoming his pupils to apply everywhere the utilitarian standard, and to ask in every case whether the matter studied will prove of any practical benefit. This would be following Rousseau, for he demanded that the pupil should always be asking, "Of what use is this? Of what practical benefit will it be to me?" But the teacher can overcome this difficulty by applying the standard, not of external, but of internal usefulness, *viz.*, by demonstrating how useful the respective part or detail is for making progress in one's studies.

Apperception is the assimilation of an intellectual content through reproduced ideas. In every reception of such a content there is a reproduction of ideas, but in the case of apperception these ideas serve as means or aids. The helpful reminiscence is the most intelligible example of apperception. The assimilation may, in accordance with our psychological foundation, be twofold, either a mere reception or a perception through thinking, *i.e.*, comprehension. But Herbart can not recognize the differ-

[1] *Ibid.*, p. 71.

ence between reception and comprehension, because he traces all thinking back to sense-representations (*Vorstellungen*) and thus employs apperception as a middle step. In the technique of instruction apperception is in reality such a middle step: the reproducing reception is placed between the mere reception and the comprehension, and reproductions co-operate also in the latter. But the continuity of mental life should not tempt us to merge its principles in one another.

We must distinguish two kinds of apperception: one which prepares the way for the comprehension of a thing, though not yet giving it; and another which leads to the comprehension. In the first a reproduced content serves as a support for a new content about to enter into the mind; it offers, one may say, its hand to the newcomer, introduces him, and leads him in the direction where the assimilation will take place, without, however, considering its own relationship of superordination nor of subordination to the new content. These relationships, however, must be considered in the second kind of apperception, where the new content is assimilated with the old as soon as the pupil grasps the meaning of what is given, its concept and its cause—all of which, as was shown before,[1] coincide ultimately. The first apperception presents the object to the mind, the second makes it intelligible. The first prepares the object for the assimilating faculty, the second brings about the assimilation. The first takes its helps and means of apperception from the pupil's mental horizon; the second, from the nature of the thing to be apperceived. The first proceeds psychologically; the second, logically.

To present an object to the mind, we employ equivalents, similarities, analogies, parallels, relations, and contrasts. For example, to give an idea of foreign conditions, we look about us for something similar to serve as an illustration; to illustrate the forms of a foreign language, the teacher of grammar will turn to familiar expressions, and the teacher of the classics will parallelize ancient and modern customs and institutions.

But the explanation of the classics calls also for the second kind of apperception, for it is based on the relationship between the sense and its expression, *i.e.*, between the end and the means, between the higher and the lower. It must impart the understanding, not only of words, but especially of the subject-matter embodied in the words.[2] The explanation is partly analytical

[1] *Supra*, ch. XLI, 3.

[2] *Supra*, ch. XL, 5.

and partly synthetical. The following are analytical in nature: the exposition, the definition, the incorporation into a system, and the motivation; and the last mentioned may be either rational, causal, or final. The synthetical explanation employs the division, the systematic correlation, and inquires into the effects, results, means—which points we shall take up when dealing with the articulation of instruction.[1]

The pupil performs many more apperceptions than the teacher occasions, and the teacher should bear this in mind, lest he explain what is already clear, and interpret where no interpretation is needed. The apperception aids are like the additional horses hitched to a wagon only in the case when either the road is too steep or the load too heavy, but not used in ordinary circumstances. The apperception aids should always be selected with a view to assisting either the first reception or the subsequent comprehension. Their chief object should be to induce the pupil to be interested and diligent in the independent search after the comprehension.

4. An old saying, meant to recommend a method of teaching, promised that if the teacher employed this special method, his pupils would learn "*cito*, *tuto*, *jucunde*;" and these three words aptly sum up what the instruction ought to accomplish, and may well be harmonized with our psychological factors. The "*jucunde*" can be connected with interest and attention; the "*cito*", with apperception, because all safe and quick progress in instruction depends upon it; and the "*tuto*" suggests that we inquire how the subject-matter of teaching can be fixed in the mind, for this alone will ensure reliable knowledge and skill. To ascertain whether the content be fixed in the mind is the easiest way to test the results of instruction, and this is the reason why the unsophisticated masses regard memorizing and practical skill as the chief elements of all learning or even as its very essence.

This was the forte of the older schools. The very first presentation of the subject-matter was so arranged as to assist the memory. The teacher first repeated the matter several times and was followed by the pupils who did the same. The matter to be committed to memory was often recited in chorus, especially in the monastic schools, and here the custom of reciting the office in common may have suggested the method. This, however, is doubtful, as the practice obtained centuries before

[1] *Infra*, ch. XLIX, 1.

in the East, whence it may have been introduced into the West. Repetition was said to be the mother of studies; and no day was to pass without its exercise in writing (*linea*). In medieval biographies we frequently find descriptions of how the material of instruction was memorized by the young. For instance, in Eigil's *Vita Sti Sturmi* we read: "*Psalmis tenaci memoriæ traditis, lectionibusque quam plurimis perenni commemoratione firmatis, sacram cœpit Christi puer* (Sturmius) *scripturam spirituali intellegere sensu, quattuor evangeliorum Christi mysteria studiosissime curavit addiscere, novum quoque ac vetus testamentum, in quantum sufficiebat, lectionis assiduitate in cordis sui thesaurum recondere curavit; erat quippe, ut scriptum est* (Ps. 1, 2), *meditatio ejus in lege Domini die ac nocte.*"[1] With the Humanists the language exercises, *usus*, were the chief object of attention, and they could quote many ancient sayings in support of their practice.[2] Vives' saying, "*Memoria thesaurus eruditionis*," proves that they appreciated the value of memory work also.

But the educationists of the Enlightenment gave currency to new views: the development of the understanding, particularly of judgment, was brought to the foreground; skill was thought of less importance than knowledge; the exercises were left almost entirely to the free will of the pupils; and the amount of memory work was much reduced. What these innovators attacked most, was the cramming of the memory, and they have justly been charged with "knowing naught of the mystery of memory, of being familiar only with the parrot's mechanical memory, but not with the spiritual and vital powers of the human memory."[3] Pestalozzi began to reinstate skill and the related exercises in their former place of honor. He called "knowledge without skill the most fatal gift of the century," and arranged his course of study with a view to training the eye and the power of expression. But owing to the formal character of his system, he also failed to recognize the importance of memorizing. Herbart did not give skill its rightful place in his system, yet in his formal steps he recognized the value of application and related memory work and exercises to application, and thereby gave countenance to the right view.[4]

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[1] Pertz, *Mon. Germ.*, II, p. 366.

[2] Cicero, *Pro Rabir.*, 4, 9: "*Usus magister est optimus*"; Cæsar, *Bell. civ.*, 2, 8: "*Rerum omnium magister usus*"; Pliny, *Ep.*, I, 20: "*Usus magister egregius*".

[3] K. v. Raumer, *Geschichte der Pädagogik*, II, p. 6.

[4] *Outlines*, pp. 74-75; *supra*, ch. XL, 4.

5. Memory work and exercises, whose joint function it is to fix a content in the mind, should be connected, as far as possible, with the application. Nothing should, as a rule, be made the subject of memory work or of exercises but what can be applied later; what is to be memorized should be fixed in the mind for the application and through the application. What has been fixed in the mind should be applied, and should, in the first place, be selected with a view to that end. Let the pupils learn what can be applied, and let them apply to good purpose what they have learned. This interchange and interrelation resembles the metabolism of organic matter, and it is in this sense that in linguistic instruction we may speak of a circulation that is based upon the interrelation between knowledge, skill, and expression.[1]

This interchange of functions is easiest of realization in language teaching, and after it in the teaching of mathematics, because in neither of these two subjects is there any need of elaborate methods to reproduce the subject-matter and to connect it with other units and other conditions and problems. In these two subjects it is not difficult to find applicable material and to apply what is found, though the many offences committed against this principle show that a certain care is needed here also. With the other disciplines the application of what has been learned is not so many-sided. But more opportunities may be found by treating the material with a due regard for its inner connections, therefore, by applying the organico-genetic method (ch. XLII) and by correlating the branches properly (ch. XXXVI). In this respect it is very important to establish an intercourse and interrelation between the branches of the curriculum, for then there will be opportunities in many directions to apply what has been learned: linguistic knowledge can be applied in history; historical knowledge, in reading; both linguistic and historical knowledge, in the *realia;* and the humanistic subjects and the *realia*, in philosophy.

If something can presumably be fixed in the mind by being applied, it need not be memorized, and in so far the practical application lessons the work of the memory; yet, on the other hand, it also emphasizes the need of good memorization: what must be ready so as to start the application, must be well memorized. The matter to be learned, particularly by beginners, ought to be arranged from this viewpoint. Perthes must be

[1] *Supra*, ch. XXXVI, 3.

commended for suggesting, in his reform of Latin instruction, that in studying the Latin vocables the *Wahrnehmungsstoff* (material perceived with the senses), *i.e.*, those words which are fixed in the mind without any special effort, be distinguished from the *Gedächtnisstoff*, *i.e.*, such words as can not be fixed in the mind except by being learned by heart.

The elements that recur frequently, will be fixed in the mind by means of the physical mechanism. But in the case of those elements that occur only rarely it is advisable always to refer to their first appearance. The recurrent review proceeds from some definite occasion and recalls for its sake smaller portions of what was previously learned, and in this point it resembles the application, which also connects the later with the earlier. Such a review will prompt the pupils to consult books, to read up the matter, or, perhaps, to make a note of the respective subject-matter. This kind of review must remedy any defect discovered in what was learned by heart, while the review proper recalls larger portions.

The teacher must ever be on his guard lest his pupils forget what has been committed to memory; and though this duty is less pleasant than to lecture on new matter, still it must be performed, and it has its own reward in the consciousness that through the teacher's vigilance the essential elements of the pupils' knowledge have been preserved in their entirety. In his treatise *Of Education*, Milton praises the practice of reviewing: "It is so supposed they (our noble and our gentle youth) must proceed by the steady pace of learning onward, as at convenient times, for memory's sake, to retire back into the middle ward, and sometimes into the rear of what they have been taught, until they have confirmed and solidly united the whole body of their perfected knowledge, like the last embattling of a Roman legion."[1]

We shall treat other forms of the review when taking up the question of how the materials of instruction are to be arranged with a view to fixing them in the mind (ch. L).

6. Practice does for the arts what the review does for the sciences. The proverb, "Practice makes perfect," is the counterpart of the school saying that repetition is the mother of studies. Here also application is the most welcome point of relationship, and practice remains the most intelligible aim of

[1] *Prose Works of Milton*, edited by Rufus Wilmot Griswold, Philadelphia, 1845, Vol. I, p. 163.

exercises. In this sense old school sayings declare teaching to be the capstone of learning,[1] because it is the most natural application of a course of study; and the same reason prompted the old school practice of public entertainments, *academies*, etc.[2] Practice, like memorization, makes heavy demands on the time and energy of the pupils. But the demands could be lightened considerably by arranging the course of study in easy and natural stages that would invite and encourage self-expression. The teacher must insist that easy problems be solved well and entirely, and should not let his pupils attempt what is beyond their powers. Still, he may not deny them the inspiration that comes from communing with the world's best and greatest achievements. Although he must train his pupils to overcome the technical difficulties, a spiritualized skill should ever be the object of his endeavors. Only that teacher can train his pupils to a high degree of skill who is himself somewhat of an artist: it is not enough if he can give directions and note mistakes, for he must himself be able to supply the right thing.

CHAPTER XLIX

The Logical Factors of the Didactic Technique

1. The analysis and the synthesis of the content of education are of similar importance for the didactic technique as for the didactic formation. Analysis and synthesis, as applied to the whole course, deal with a larger subject, and thus the teacher who takes up the details must see to it that the pupils are trained to pass from the specific to the generic, and from the generic to the specific. In chapter LIII, we shall see how this principle is to be applied in language studies, but here we shall examine the treatment of logical elements only.

The synthesis that is used most in actual teaching, consists in illustrating an abstract matter by something concrete and, if possible, by visualization, *i.e.*, by exhibiting the object before the class. And corresponding to this kind of synthesis we have the analysis which abstracts, generalizes, or discovers the cause of a concrete content. Thus sense-perception and thinking appear as the extreme points of these two thought-movements, and along the line that connects the two points lies a goodly part of the teacher's work.

[1] *Supra*, ch. XL, 3. [2] *Supra*, ch. XLVI, 5.

Sense-perception and thinking depend upon each other: the ideas can not be formed without the solid basis obtained from the objects perceived with the senses; and to convey ideas, we must use illustrations drawn from the sensuous world. But we must, on the other hand, proceed from the sense-perception to thinking, else we shall, amid the phenomena, miss the essence. "Thoughts without content," says Kant, "are void; intuitions without conceptions, blind."[1] This is true, but it is not true, as Kant alleges, that all conceptions of the supersensuous are void, and that true knowledge is limited to the sensuous. Sense-perceptions and ideas, the concrete and the abstract, are apperception media to one another. The concrete illustrates the abstract, and through the abstract we understand the concrete. The teacher must, as Herbart puts it in one of his early works, enter into the mind by way of the senses and infuse ideas into the results of the sense-perceptions;[2] *i.e.*, one must visualize the idea and idealize the sense-perceptions.

True knowledge is impossible without the previous activity of the senses, and in acquiring knowledge the first step is sense-activity. But the reverse is also true: the acquired knowledge will sharpen and train the senses. Goethe says: "We can truly see only that of which we have some previous knowledge, for as the nearsighted person, if he would see an object more distinctly from a distance, must first examine it at close range, since his bodily eye will then be assisted by the mental picture, so knowledge is the perfection of sense-perception."[3] Sense-perceptions are vivid and vivifying; they give color, tone, and life to the objects perceived, and thus establish a connection between the cognitive and the appetitive functions. But "without the generic we should have no knowledge, and to correct erroneous ideas, we should have to rely upon the actual contact with concrete things; through the generic we control what is specific."[4]

Because of this close interrelation between the sensuous and the ideal, it is impossible to lay down a general rule as to which of the two should have precedence in instruction. But *a potiori* we must observe the following rule: From the concrete to the abstract, from the sense-perception to the idea. This rule is

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[1] *Critique of Pure Reason. Idea of a Transcendental Logic.* Translated by J. M. D. Meiklejohn, London, 1855, 6. 46.

[2] *Pädagogische Schriften*, edited by Willmann, I, pp. 117-118.

[3] *Werke, Ausgabe letzter Hand*, Vol. 38, p. 12.

[4] Trendelenburg, *Erläuterungen zu den Elementen der arist. Logik*, 1861, commentary on ch. VI.

based on the natural working of the mind, for all knowledge begins with the sensuous. Furthermore, the rule repeats the first two members of the series: reception, comprehension, application, or its equivalents: empirical, rational, technical.[1] But as the analytical method has beside it the synthetical, so the teacher will often do well to begin with the abstract, and he should always do so when the very term conveys to the pupil a clear idea. In this case the term may well be the starting-point of the inquiry to be followed and supplemented by what is obtained through sense-perceptions. There are even cases in which the inquiry should conclude with the concrete and the logical method serves only to mature and deepen the sense-perceptions. The instruction in natural history is a case in point, for the prime function of this branch is to train the eye for the observation and study of nature.[2]

2. The relationship between the abstract and the concrete is not the same in all disciplines. In grammar we find the abstract element in the rules, and the concrete in the examples illustrating them. The example is understood more easily than the rule; it is more readily fixed in the memory; and it is typical of all analogous constructions. Hence Comenius had reasons enough to lay down as a principle that the example should precede the rule, "for the light should precede that which it is to enlighten."[3] Compared with the example, the rule may well appear dry and uninteresting, but in the teaching of language it is nevertheless of the greatest value. It is the rule which enables the pupil to use correctly whole classes of forms and constructions; it traces them, at least in part, back to their causes and thereby gives a true comprehension of them. And though the rule supplies no model for application, it furnishes directions for the use of language; it occasions many conclusions, and these are superior to analogies. Place the rule before the example, and the pupil will be encouraged to apply the heuristic method and to discover by himself examples of the rule. The advantages of both methods will be secured by letting the carefully worded rule precede the examples: the examples should be committed to memory, but the rule need not be memorized verbatim, because the examples, once they have been learned by heart, will help to retain in the mind the substance of the rule.

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[1] *Supra*, ch. XL, 3. [2] *Supra*, ch. XXVIII, 2. [3] *Did. magn.*, 16, 18.

The work of memorizing the words of foreign languages could be much lightened, if more attention were given to the relationship between the abstract, represented here by the words, and the concrete, which is their meaning. Given a vivid conception of a thing, it will be easy to memorize the word that expresses the respective thing. To fix the word "*aquila*" quickly and deeply in the mind, the teacher had best point to an eagle and give at the same time its Latin name. This consideration induced Comenius to turn his *Janua* into an *Orbis pictus*, and the illustrations of his *World in Pictures* were a useful aid to the memorizing of the vocables. We may perhaps find occasion to apply the same principle in dealing with certain subjects. The terms for the armor of the Homeric heroes might be easily and permanently impressed on the mind, if presented in connection with pictures of the respective parts. The first exercises in speaking a foreign language had best be connected with pictures. In this point the Philanthropinists for once made no mistake, and we should imitate them herein, but show more taste in the selection of the pictures.

The theorem and the problem occupy in mathematics the place that the rule and the example occupy in grammar. But in mathematics the generic is even more important than in grammar. If the pupil imitates in his construction a similar construction, instead of following the rule, his action is, though ungrammatical, still not contrary to the spirit of language. But if he solves a problem according to the solution of a similar problem, instead of according to its law, he will miss entirely the purpose of the problem. The formula in arithmetic and the construction in geometry occupy a middle position between the abstract and the concrete. Though the formula is the equivalent of the theorem, it can be learned by heart more easily than the theorem, which latter is expressed in words. The geometrical figure is the visualized expression of general principles, and can easily be employed to visualize any magnitude. In this respect we should imitate the ancients, for they represented numerical relations in meaningful constructions.[1]

In mathematics we should carefully visualize the actual conditions with which the problems happen to deal. These conditions should, if necessary, be explained independently of the problem, lest the subject-matter of the latter render the application of a law more difficult. The pupils must be familiar

[1] *Supra*, ch. XLIV, 3, and *infra*, ch. LVI.

with percentage, commission, interest, discount, etc., before they solve the problems that deal with these matters, and should learn to distinguish in these problems the commercial element from the mathematical.

3. Philosophy regards the different forms in which the concrete and the abstract can appear as the proper objects of its inquiry, and this wide range of material should also influence the method of teaching this subject. The instruction in logic should abound in examples rich in variety and content. Herein lay the weakness of the older instruction with its premises concerning the mortality of all men and of Gaius in particular, and this defect has given rise to the witticism that Aristotle's logic is the best, because he was wise enough to discard all examples. The textbooks of Drobisch, Überweg, and the *Erläuterungen* of Trendelenburg have demonstrated how the teachings of logic can be illustrated by proper examples.

The religious instruction should turn to the Bible for the best model of how the concrete and the abstract can be combined. The parable gives body to the doctrines, without, however, materializing them, because it urges one to get at the soul of this body. It, furthermore, takes its material from the mental horizon of the masses, and in this way the sublime truths and precepts are rendered intelligible, and the heavenly doctrines are brought to bear upon the needs and conditions of everyday life. Every symbol connects some sublime content with a sensuous form. There is a relationship of mutual helpfulness between the history of the Church and the systematic treatment of her doctrines. The history of the Church illustrates her doctrines, and the doctrines convey the meaning of her history. The teacher of religion should, therefore, illustrate the commandments and doctrines by stories from the Bible; and should embody the didactic content of the Biblical stories, wherever possible, in brief texts from Scripture. The lives of the saints should be treated in a similar way.

The historical instruction deals with concrete facts, but these must be presented in so condensed a form as to make them appear too abstract. Of wars, political events, revolutions, and subsequent reconstructions our young people have generally not even an idea, much less a clear picture. Only a detailed treatment—and the limits to such a treatment are obvious—can visualize these matters. The chief difficulty of the teacher of history lies in discovering and maintaining the right proportion

between the detailed treatment and the outline sketch. Some educationists contend that the biographical study of history is the most elementary, because the personality of the great men, so they argue, can be visualized most easily. But against this view there is the obvious objection, that biographies are everywhere a late form of historical writing, and this is to be expected, because they necessitate the more or less artificial grouping of facts about the man whose life is under review. The biography is of all forms of historical writing farthest removed from the epic, and the latter is the first in point of historical development, and hence its methods should be adopted for the elementary historical instruction. The epic and the kindred style of historical writing furnish concrete details in sufficient quantity. The narration should draw upon the original sources, and by thus preserving, at least to some extent, the vividness of the native coloring, it will refresh the young mind tired of the dull grey of the outline sketch. Pictures will also be aids to the objectivation of the past, yet with the present deluge of historical illustrations one must insist that less pictures, if treated adequately, are more desirable, because less distracting, than a larger number. By making a drawing on the blackboard the teacher may often visualize a past event more strikingly than by exhibiting a finished picture. Blackboard sketches are valuable aids to historical instruction.

But to visualize the past is not enough, for the pupils are to obtain general views of the public and private life of the past, of the state of civilization, of cultural conditions of all kinds; and these general concepts are best imparted by using the comparative method.[1] History, too, is after all a school of thought, and the ancients justly called it the "mother town of philosophy."

4. We have seen above[2] how the teacher of geography should train his pupils to find on the map the answers to many questions. He also must be on his guard lest his pupils be distracted amid the wealth of details, and lest, in the endeavor to make geography a school of thought, the subject become dry and unattractive. The teacher of geography should have at his command a certain stock of sense-perceptions. He should, therefore, have travelled as one who carried his eyes and his itinerary along with him. It is not the extent, but the manner, of his travels that will let him reap the benefit, or, as Dr. Johnson puts it, "the use, of travelling: to regulate the imagination by

[1] *Supra*, ch. XXVI, 3. [2] *Supra*, ch. XLVI, 8.

reality, and, instead of thinking how things may be, to see them as they are."[1] Riehl's *Wanderbuch* is a good help in the training of teachers of geography.

In natural history the contrast between the concrete and the abstract is found between the specimen and the species to which it belongs; in the natural sciences, between the fact and its cause, between the phenomenon and its law, between the experiment and its explanation. In the natural sciences one should not only use the sense-perceptions, but live oneself into them; and there must be an opportunity, besides, for the mind and its ideas to deal with the sensuous element. Lord Bacon has wittily likened the pure empiricists to the ants busy with collecting, the rational philosophers to the spiders spinning their web out of the juices exuded from their own bodies, and the true investigators to the bees collecting and transforming all that they collect.[2] But in the examples that he adduces in illustration of his own method he imitates the ant, for he does no more than collect instances.[3] Liebig has pointed out that this method is the very reverse of the experimental investigation of nature, which must be pursued along the lines of the Aristotelian induction.[4]

Modern experimental research takes up an individual case and examines it thoroughly, and this recalls Aristotle's doctrine regarding the activity of the *intellectus agens* in elaborating the concrete phantasm of the object into an intellectual concept[5]—rather than Bacon's method of accumulating instances. The scientist may well lay down a certain hypothesis from which to draw conclusions, and in this he rightly imitates the spider, whose airy web is ridiculed by Bacon. The Encyclopedists of the 17th century found, like Bacon, more satisfaction in accumulating empirical materials than in entering into the nature of the sensuous materials. Witness Comenius' *Orbis pictus*, which presents under the caption of sense-perception, autopsy, "ocular inspection," all that can be represented in pictures, and yet allows no sense-perception to mature. Our instruction in the natural sciences inclines to the same defect, though it could be improved so easily by adopting the methods of present-day scientific research. The development of the sense-perceptions, the wise use of them, and their conversion into thought-elements are in an inverse ratio to the size of the textbooks and the quantity of didactic apparatus.

[1] Piozzi, *Johnsoniana*, 154. [2] *Nov. Org.*, I, Aph. 95. [3] *Ibid.*, II, Aph. 11-20.
[4] *Über Baco von Verulam und die Methode der Naturforschung*, 1863.
[5] Maher, *Psychology*, New York, 1911, p. 306.

CHAPTER L

Articulation of the Subject-Matter of Instruction

1. We have all along regarded the content of teaching as a *ζῶον*, an organism, a whole consisting of head and members, of body and soul. This picture we had in mind both when we stated that the organization of the educational content is the chief purpose of the course of study, as well as when we demanded that each subject be adjusted to the whole course in accordance with the organico-genetic principle. And we are adhering to the same picture when insisting, in the present chapter, that the didactic technique must see to the articulation of the subject-matter of instruction.

The terms that express the organic conception of education have gone over into the language and are employed quite generally by educationists, even by those who refuse to recognize the organic world-view and adopt instead the atomistic conception. Thus Herbart speaks of the members of interest, of the branches of study, of the articulation of instruction; though his system does not, and can not consistently, recognize any intellectual organisms. In the case of the organic world-view, however, the analogy that is the basis of these terms, is founded upon an actual relationship between the realities themselves; here the words are *φύσει*, expressions of realities, and not mere *θέσει*, conventional terms. The underlying purpose of all the rules we have laid down is this: all instruction should, as a whole and in its parts, on a large scale and in its minutest parts, be so conducted that the content of teaching will, in accord with the nature of the human mind, so develop and be so correlated in its parts as to be analogous to a living being. Each of the various subjects that we have dealt with, has brought out different points of this analogy. The main point in the course of study is that the various materials and studies be vivified and governed by one leading principle as by their soul. For the curriculum it is essential that all its elements be closely interrelated so as to promote the procreative progress. In actual teaching the teacher must deal with the smallest of didactic units, and here the analogy with the organic world demands that the subject-matter should out of similar parts coalesce into a connected whole; and this we call the articulation of the subject-matter of instruction.

A content of teaching is articulated if it consists of a series of points that are distinguishable from one another, yet so con-

nected as to form a unit. If the parts of the content blend, they are like the colors that run in washing, and the pupil's reception of them will be hazy and indistinct. Yet if they are merely placed side by side, without being internally connected, some of them will be lost in the educative process. The right dividing lines are as important as the joints, and the structure of the content is best if its members are clearly distinguishable from one another, but suggest at the same time that they are parts of a whole.

2. For the purpose of obtaining a better idea of the import of articulation, we shall briefly examine it in connection with the formal steps,[1] because each of these shows a new phase of the subject. What the first step (reception) demands most is clearness in presenting and distinguishing the various parts or points of the subject-matter. The essential thing for the second step (comprehension) as well as for the explanation or development is that perspicuity which has all points grouped after the manner of a system to bring out their interrelation. The subject-matter will be retained and fixed in the mind best by means of short series consisting of closely associated members. For the purpose of the third step (application) the material should consist of movable parts which admit of various combinations. Thus clearness, systematic perspicuity, association, and combinative power are necessary for articulating the subject-matter of instruction. These elements resemble Herbart's series, *viz.*, clearness, association, system, method, upon which Ziller has based his formal steps.[2] But our elements differ from Herbart's series, first, with regard to the source whence we draw the elements and, secondly, with regard to the meaning we attach to association. Herbart explains association as implying the varied combination of elements, while we assign the latter to combination and practice, and restrict the meaning of association to the combinations that assist the work of the memory, which Herbart fails to consider in his series.

That clearness is essential to successful teaching, has long been recognized. Witness the old saying of the schools: "*Qui bene distinguit, bene docet;*" and Horace's line about the "*lucidus ordo,*" the lucid arrangement,[3] was often quoted as a rule for teachers. The function of the distinction is, first, to separate off clearly the several parts of the content of teaching and thus prevent their blending, and, secondly, to note clearly their

[1] *Supra*, ch. XL, 5. [2] *Supra*, ch. XL, 4. [3] *Ars Poetica*, 41.

distinguishing traits and so prevent their being confounded with one another. There is a limit to making distinctions, for the mind's eye requires for a clear perception, like the bodily eye, a certain magnitude of the object to be perceived. Too large a whole with no distinctions precludes a clear perception just as much as a whole that is cut up into parts too small for the eye to see and to distinguish. Seneca says of the minutiose analysis: "*Simile confuso est quidquid usque in pulverem sectum est.*" Pestalozzi is guilty of this fault, because in searching for his elements he went so far as to treat such minutiæ as appeared to Schleiermacher to have "no life at all;" whereas the "law of continuity demands that only living elements be introduced to show how everything developed from what preceded."[1] When Cicero contrasted the "*dividere rem*" with the "*frangere rem*,"[2] he warned against making arbitrary distinctions instead of following up the natural lines of division.

Horace himself explains what his "lucid arrangement" implies: "That the poet just now say what ought just now to be said, put off most of his thoughts, and waive them for the present." But it implies, besides, that each subject be treated according to its weight and importance, a point that Cicero refers to when saying, "*Res momento quodam atque judicio dispensare atque componere.*"[3] Most young teachers fail in not applying shadow beside the light, the former for the less important and the latter for the more important. They will overcome this difficulty by carefully outlining the matter to be dealt with. In the Latin terms for the means employed for ensuring clearness, *distinguere*, *dispensare*, *dispositio*, the prefix *dis* recurs, and this circumstance suggests that the individual elements be kept separate. But this separation should lead to having the elements move apart from one another, and this will promote the unfolding, *evolutio*, ἀνάπτυξις, of the single parts. Young teachers err in this point also. They tell at once all that they have to say, and do not let the reception of the individual matter mature. They give grains of seed instead of plants. Though it is wrong to stretch out any material contrary to its nature, yet the content must swell, as it were, just as the grain of seed must also swell before germinating.

3. For the purpose of the reception, the material should, indeed, possess a certain fullness. But for the purpose of being

[1] *Erziehungslehre*, edited by Platz, 1849, pp. 422 f.
[2] *De finibus*, II, 9.
[3] *De Oratore*, I, 31.

comprehended and retained in the mind, the material should be condensed into the smallest possible compass. The English term *digest*, denotes a body of information that is digested, or classified and arranged under proper heads and titles, and the term is happy as connoting the organic nature of the process. The same is true of the Greek (*κεφάλειον*) and Latin (*caput*) words for extract. The primary significance of these ancient terms is head, and so they imply that the *caput* or *κεφάλειον* contains, as it were, the whole body of information compressed within itself. The older education did not neglect orderly arrangement and the duty of condensing the subject-matter of teaching for the purpose of facilitating the comprehension.

Hugh of St. Victor says, in his *Liber didascalicus* (III, 12): "After you have divided the material for the sake of studying it, you must, in order to deposit it in your memory, compress it into a small compass. The ancients had a special term for the summing up, which should take place after one has studied a subject in detail: '*epilogus*, *i.e.*, *brevis recapitulatio supradictorum*.' We find in every treatise a certain principle which contains in a nutshell the truth and substance of the matter discussed; and all that is said and discovered in the course of the inquiry can be related to it. To discover and study this principle, is the function of the '*epilogus*.' There is but one fountainhead, but the brooks are many in number, and to follow up the windings of their course you must fix your eye on the fountainhead and you will have a view of the whole."

Because the comprehension is concerned with the essence, it is necessary that all unessential matters, all mere additions, and mere accessories be discarded for its sake. The orderly arrangement will assist one in entering into the nature of a thing, as Plato says *ὁ γὰρ συνοπτικὸς διαλεκτικός* (A synopsis of a subject gives an insight into it). But the comprehension must at the same time inquire into the cause. It asks not only *τί ἐστιν*, what a thing is, but also *διὰ τί ἐστιν*, why it is; and therefore it is interested in the interrelation. It examines into the inner associations of the materials, while the memory is satisfied with external associations also. Organic units and genetic series[1] are most welcome for individual parts of the content of teaching, for they reveal the closest connection. Some part of the educational content may at first seem to be disjoined from the rest of the course, and then a close scrutiny will be the duty of the

[1] *Supra*, ch. XLII 1.

teacher; for the connection is there, and not merely an external connection, one that might possibly assist the reception and the memorization, but an inner connection that will be food for the thinking mind. In our examples of the different kinds of instruction we shall find instances enough to support the truth of this statement.

To make plain the structure of a content of teaching, it is necessary in many cases to represent its elements graphically by a diagram, a synopsis, a chart, a conspectus, a *σύστημα*. The term system, as used in logic, means the final summing up of the content of a science. But in pedagogical methodology we must use the term in a broader sense for any plurality of series, of which each again consists of several elements or points. To bring home to the mind these different parts, the method of spatial visualization is employed. The system is the form that is best adapted for embodying the sum-total of the results of any inquiry or development, and upon it the teacher should, during the inquiry or development, direct his attention, as this will assist him considerably in condensing the subject-matter of instruction.

4. The pithy, connected, and perspicuous way of putting things will also be an aid in fixing the subject-matter in the mind and memory. Proverbs are "one man's wit and all men's wisdom," and contain much in few words. Aristotle tells us that men were wont, before the art of writing was known, to cast their laws in rhythmical form and sing them as songs.[1] The practice of distributing the laws over several tables was probably prompted by the desire of assisting the memory by the representation of space-relationship. What is to be learned by heart, should be expressed in the briefest possible form. The memory should not be overburdened with unnecessary matter, just as we do not load down our bodies with too great a weight of clothes. We should eliminate from the series all that the pupil can easily add by himself.

The medieval schools are to be commended for their method of memorizing the parts of the so-called irregular verbs: the forms of the perfect and supine were grouped in mnemotechnic verses, while the Latin pupils of to-day must memorize whole pages of the four parts of verbs—a waste of both time and energy. The Leonine verses of the old time are too foreign to us, but it is not difficult to condense the whole matter into one

[1] Aristotle, *Probl.*, XIX, 28.

page of mnemotechnic lines. For instance, the following verses might be memorized for the formation of the perfects in *i* in the second conjugation: *cavi, movi—favi, fovi—pavi, vovi—sedi, vidi—prandi, stridi.* The following verses will serve for memorizing the forms of the supine: *doctum, sorptum, tostum—mixtum, censum, tentum;* and the following, for the perfects in *ui* in the third conjugation: *alui, occului—colui, consului—rapui, strepui—genui, tremui—serui, texui—cubui, messui;* and these, for the forms of the supine: *fictum, pictum, strictum—fixum, flexum, fluxum—sparsum, mersum.* The following forms may serve to introduce the series of the reduplicated perfect-forms: *pupugi, pependi—tutudi, tetendi—cecīdi, cecīdi,* etc. All these series are such as will, to quote Jean Paul, "indent themselves into the cortex of the brain."

Even if the matter to be memorized be purely intellectual, its memorization may be assisted by mechanical memory helps, by brief series of catchy forms that recall what has been understood. For example, in astronomical geography it is generally not enough to have understood a truth. It must, moreover, be so fixed in the memory that it can be recalled at will. The practice of associating the shape of the increasing and decreasing moon with the first letters of *crescens* and *decrescens* is a familiar instance in point.[1]

Familiar quotations, famous sayings, and household-words are valuable helps in teaching history and geography. Witness the "*Videant consules*" and Cato's "*Ceterum censeo.*" In chapter LII we shall show how such quotations can be turned to good account in teaching medieval history—a field where this method has been hitherto neglected. The pupils should be trained to collect and file axioms and apothegms, for this work will awaken a deep interest in these matters.

5. The interrelation, which is so important an element for comprehending an intellectual content, assists also in fixing it in the mind; and in this sense Descartes was right in calling deduction the best art of memorizing.[2] A further memory help will be obtained by connecting the interrelation with some external and clearly marked off sequence. Thus the actor, when learning by heart any number of riming verses, is assisted in

[1] In Pliny we find this formula: "*Luna semper cum crescit, ortus spectat: cum minuitur, occasus.*"

[2] *Règles pour la direction de l'esprit,* 7; cf. Rockliff, *An Experiment in History Teaching,* London, 1912, pp. 12 ff.

his work by various circumstances: by the interrelation of the text, the rhythm of the verse, the symmetry of the rime, and the marking off of the single words or sentences by his spontaneous gestures. From time immemorial it has been the practice of teachers to establish an external and artificial connection for the purpose of assisting the memory: letters that are to be memorized are made into a word; words into a sentence, or, if possible, into a verse. Such *voces* and *versus memoriales* are met with everywhere, and though the connection they establish be purely external, yet it is not to be scorned, provided an internal relationship, which would be superior, can not be found. Thus the difference between *occĭdere* and *occīdere* may be fixed in the mind by remembering the old verse: "*Occidit latro, verum sol occidit almus.*" But it is more advisable to remember the reason why the two verbs differ in quantity: the vowel in *cado*, the primitive word, is short, but in the transitive *cædo* it is long, because *cædo* is a further development of *cado*, and the same relationship obtains in the compounds of the two words.

The simplest method for demarcating what is learned by heart is to employ the motor sensations. It is for this reason that copying a text assists us in memorizing it. We can assist the memory by merely walking to and fro while learning something by heart, or by moving the body, or only the head—an old practice in eastern countries. Hence it will be found useful to train the beginner in Greek to write, when pronouncing a Greek word, the accent with his finger in the air. Another method for demarcating something is to associate the parts of a series to be gotten by heart with the parts of an already familiar series. To connect the new with a series of numbers is the form in which this method was used most extensively, for instance, among the Eranians and the Chinese.[1] The same method was employed in the Middle Ages in sayings such as the following: "One is the Lord God, two are the tables of the Mosaic Law, three are the Patriarchs, four are the Evangelists," etc.[2] However, every arrangement of memory matter that counts up point one, point two, etc., employs the numerical series as a memory help.

Following the principle that space relationship is a valuable factor in fixing things in the mind, the ancient mnemotechnists recommended that one associate his ideas with certain localities.

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[1] Vol. I, ch. VI, 2 and ch. VIII, 2.

[2] Rocholz, *Alemannisches Kinderlied und Kinderspiel*, 1857, pp. 267 f.

To connect geographical and historical data with places on the map, cannot be recommended too strongly. For the sake of both clearness and memorization, the events, for example, of a war had best be connected with definite places on the map; and for tracing the cultural or literary history of a country, maps are likewise invaluable. Charts and diagrams assist the memory as well as the understanding, for what is perfectly understood is remembered best.[1] The tabular and alphabetic method, first employed, in the 18th century, by Hähn in the Berlin *Realschule* and developed by Felbiger, is a misapplication of a good principle, for by casting all the study material in the form of charts and tables it wearied the pupils with numberless mnemonic devices, and prevented them from realizing the usefulness of tables if used at the proper place.

6. While fixed associations are the best aids to regular memory work, the spontaneous memorizing, which we distinguished elsewhere[2] from it, is assisted most by introducing the same matter in different combinations, as this will prevent the pupils from growing weary of having the very same material presented again and again. The combinative and varying review supplements both the simple review, which repeats the material without any change, as well as the recurrent review, which fills only the gaps that happen to be discovered in the content of the memory. The different kinds of the review should not be confounded with the examination, for, as Herbart justly insists, "The purpose of an examination is to ascertain the actual state of knowledge, whatever it may prove to be. Reviews are conducted for the purpose of increasing and deepening knowledge. If an examination is followed by praise or censure, well and good; a review has nothing to do with either."[3] "At times the pupils themselves should feel free to indicate which topics it seems most necessary to repeat. By so doing they assume a certain responsibility as to the rest, and are made to realize all the more their obligation to make up deficiencies."[4]

It is a most favorable circumstance, if the subject-matter of teaching itself contains elements assembled in various combinations, so that the course of study will be continually reviewing and applying what has been previously learned. This is the case, to a certain extent, in language teaching; because in the texts read we find the same words, forms, and constructions

[1] For examples see chapters LII, LIV, and LVI.
[2] *Supra*, ch. XLVIII, 5.
[3] *Outlines of Educational Doctrine*, p. 118.
[4] *Ibid.*, p. 123.

recurring continually, and recurring, besides, in different combinations, so that the reading keeps alive and fresh the knowledge of words and grammatical forms and affords plentiful opportunity for applying the theoretical knowledge. Something similar is observed in arithmetic, where there is continual need of applying what has been previously learned, so that the pupil will never outgrow the use, for instance, of the multiplication tables. Mathematics proper must likewise be ever recurring to old matter, and by reason of its structure it renders necessary the review of entire sections, the presuppositions alone being changed.[1] But with the empirical sciences one must take special care to let the old matter co-operate while dealing with the new. Here there is a good opportunity for using the movable association, which brings out the points of similarity to the end that different materials may thus be connected. The pupils should assist in this work by discovering analogies, contrasts, series, and groups. The questions listed in Daniel's textbook in geography may serve as models for geographical instruction.

Schrader has suggested that larger portions of study materials be reviewed by looking at the old matter from different angles, and has illustrated his theory by showing how the Migration of Nations is to be treated. After the whole period has been treated in the history classes, he would review it by assigning to different groups of pupils different phases of the subject. The first group should follow up the courses which the different peoples took on their wanderings. The second must note in what order the Roman provinces were occupied by the several nations. The third must give the boundaries of the Roman empire for successive periods of fifty years. The fourth must deal with the leaders of the barbarians; the fifth, with the influences of Christianity on the age; while the sixth might trace the influences of the same age on the development of the Germanic cycles of romance.[2] The second reading of an author may be conducted in a similar way by letting the pupils find answers to questions put by the teacher, or by directing them to devise all sorts of new combinations. The new apperception-method will disclose entirely new phases of the subject.

7. The instruction in the arts (*Fertigkeiten*) makes extensive use of combinations and variations. In teaching reading and writing the letters are combined with the greatest variety, and in teaching music the same is done with the tones. In the

[1] *Supra*, ch. XXIII, 3. [2] *Erziehungs- und Unterrichtslehre*, ch. XCI.

instruction in drawing we find the lines connected in a great variety of ways, and the same happens with bodily movements in gymnastic exercises. The teacher may control, in some measure, these combinations according to the laws of mathematical combination and variation. Thus an *a priori* element is introduced into the didactic technique, and it is interesting to trace its scope. Herbart considers the combinative synthesis as "the most general kind of synthesis,"[1] and demands that it be treated as "an absolutely essential part of every didactic cycle."[2] "Combination—generally and very wrongly neglected—is some of the easiest work, which makes other labor easy, especially for children."[3] Herbart's view was suggested by the practice of Pestalozzi, who not only names his courses of study after the A B C, but also imitated the latter, for he presents the elements, like letters, in combinations with regular sequence.[4] Herbart's treatment of the combinative synthesis makes it a problem of the science of education, but Pestalozzi vastly overrated its scope. The latter gave too much attention to the elements, *i.e.*, to the elements of presentation, and thus neglected the content presented. He kept the pupils busy for too long a time with the combinations of letters and thus delayed their reading words and sentences; he kept them too long with drawing and comparing squares and right angles, and allowed them no opportunity for getting at the meaning of the bodies of their environment. What is attainable by an exclusively combinative procedure in the instruction in the arts, is the control of movements, of the association of ideas, and of the motor-sensations; but what is lost is the relationship to the object to be represented. But to have a perfect conception of this object, is an important factor in art, for to represent an object with any degree of exactness, it is necessary to revert continually to it and to be keenly sensitive to its control.

To attain skill, the pupil must practice: "*fabricando fit faber.*" The work itself should, wherever possible, remind him of any mistakes made, and if this is not feasible, the teacher must do the correcting. The correction may consist in a mere nod, or in the repetition of what has just been said; or it may demand

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[1] *Science of Education*, transl. by Henry M. and Emmie Felkin, London, 1892, p. 160.

[2] *Pädagogische Schriften*, edited by Willmann, I, p. 178.

[3] Herbart, *Letters and Lectures on Education*, transl. by H. M. and E. Felkin, London, 1898, p. 218.

[4] *Supra*, ch. XLI, 6.

full and detailed treatment. The correction may serve the purpose of increasing the stock of knowledge or of raising the degree of skill, and it may control the reception, comprehension, or application. There is a psychology of mistakes and their correction, and the correction may have its own educational value. The heuristic method should be employed as much as possible, *i.e.*, the pupil, who has made the mistake, as well as the other pupils should co-operate in making the necessary corrections. There is also a deictic element in making corrections: the teacher should employ the method of visualization as much as possible, and the blackboard should be used for all kinds of corrections. Let the teacher write the correct form on the blackboard, and he will often save himself the effort of much talking. There is also an explanatory element in the correction. The mistakes must, in some cases, be traced back to their causes, so as to be removed, as it were, with the roots. The mistakes and their correction may easily chill the ardor of both teacher and pupils. Too many mistakes reflect on the teacher's work, and he will do well to reform himself instead of fulminating against his pupils. With respect to mistakes the teacher should give special attention to preventive methods, and hence must be a shrewd and close observer. Humorous turns of expression may often be employed to good effect. Thus the teacher may, in connection with an exercise to be written, assume the prophet's rôle and say: "At least a dozen members of the class will violate this rule, twice as many that other rule; only half of you will have this expression correct," etc. The pupils would have to be stolid, indeed, if they would not bend all efforts to belie, at least in part, these statistics.

8. The formal steps, to which we have adapted the articulation of the subject-matter of instruction, are of so general a nature and admit of being applied to such varied materials, that we can lay down a canon that covers all the points appertaining to the subject and at the same time keeps them present to the teacher. The following questions may be put for any and every content of teaching: 1. In what way could one assist the reception of the matter, especially with respect to clearness in presenting it? 2. What could be done to assist its being comprehended, especially with respect to the orderliness of its arrangement? 3. What associations, formulas, memory lines can be found to assist in fixing it in the mind? 4. What exercises are available for fixing it in the mind, and what grouping and

combination of the matter are desirable in this connection? The third and fourth questions should be supplemented by the further inquiry: How can the matter be applied practically in order to assist in fixing it in the mind?

No part of the content of teaching is isolated, but must be connected, on the one hand, with what preceded it and, on the other hand, with the circle of thought. Consequently, it is plain, first, that the aforementioned questions and their answers must be preceded by the preparation, which introduces the new matter and leads over from the old to the new, while the old matter is being recalled into consciousness by means either of a review or of the heuristic method. It is also clear that the last step of the whole process will consist in a correlation, *i.e.*, in organically connecting the new matter, first, with what has been previously acquired by the mind and, secondly, if possible, with the pupil's interests.

The order of the procedure is materially affected by the form of instruction. In presentative instruction the full series, as outlined above, is practicable. But in explanatory instruction the steps of reception and comprehension are generally united into one, for a text is first perceived in a general way, then its meaning is grasped, and only after this is a full perception of it possible. The main point, then, for explaining the single parts is clearness, while for giving the meaning of the whole, perspicuity and orderliness of arrangement must be the prime consideration (see *infra*, ch. LIII). In developmental instruction the teacher must from the beginning aim at an intelligent reception, and thus he will best be serving the interests of the comprehension (see *infra*, ch. LV). It is, however, impossible to follow in every case the rules of our canon, because many subjects are not compact units, and require, consequently, no special preparation nor a correlation with the circle of thought. There is likewise in some cases neither an opportunity for exercises nor a possibility of applying what has been learned.

Otto Frick has aptly stated the limitations that restrict the use of the steps of the articulation of the subject-matter of instruction: "These steps should, indeed, be regarded as the guides for each and every instruction period, because they are founded on nature, and the young teacher, particularly, will find them helpful in the educative process, since they remove the fatal uncertainty in acting. Yet it were an abuse to follow the method slavishly in each and every class period. Some of the steps are impracticable under certain conditions, and must

be passed over in favor of other functions that must be brought into the foreground. One period will rarely suffice for taking all the steps, and, after all, it is not the number of periods given to a subject that will determine whether it be a true educational unit, *i.e.*, a compact whole; but such it is, if it admits of being treated profitably according to that process which is based on nature."[1]

CHAPTER LI

Presentative Instruction

1. Presentative instruction belongs to the empirical factor in learning, and in so far is connected with exhibitive instruction. But it is opposed to explanatory as well as developmental instruction, for their object is to give the comprehension of a thing. It is likewise opposed to that phase of instruction which deals with fixing in the mind the content of teaching as well as with its practical application.[2] We shall better understand the nature of presentation if we consider that it is not only the teacher that must present certain matters, for the same is done by the poet, the orator, the savant, the popularizer—with this difference, however, that each pursues his own particular aim. The object of the poet's presentation is elevating pleasure. The orator presents a certain matter in order to move the wills of his hearers. The savant presents scientific knowledge to the learned; and the popularizer presents knowledge with a view to rendering it accessible to the masses. Like the savant and the popularizer, the teacher strives to present his subject-matter in as clear a form as possible; but he strives besides, like the poet and the orator, to produce by means of this subject-matter a certain effect upon his pupils, and, if mindful of his true mission, he will try to combine into a unit the knowledge he imparts and the influence he exerts. The characteristic, then, of instructional presentation lies in the union of three ends: to impart knowledge, which is not only to prove an educational force in the pupil's life, but also to be co-ordinated with a larger whole. These ends can be inferred from the three principles of instruction which have been repeatedly discussed in the present work.[3]

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[1] *Lehrproben und Lehrgänge*, 1888, Heft 16, p. 51.

[2] *Supra*, ch. XL, 5 f.

[3] *Supra*, ch. X, 3 and ch. XXXIV, 4.

There are always more or less points of contact between the matter that is presented and the pupil's mental horizon. What is presented is, indeed, subject-matter of teaching, yet it is not in all its parts subject-matter of learning; and the pupil can, if guided aright, discover by himself much of the content of teaching. What is found in this way, is the heuristic element of presentation (ch. XLVI). Another part of the content can generally be visualized in a sensuous way, in which case the showing blends with the presentation. Other parts reveal a connected and chronological sequence of events, and such materials are best presented in the form of a narration, while other parts admit of being presented in the form of a description. The proper use and combination of these different methods ought to engage the teacher's attention first.

The heuristic element is properly introduced in the beginning, and can in most cases be connected with the review.[1] With this arrangement there will be sufficient preparation for the understanding of the presentation, as the preliminary difficulties will be cleared up, but the teacher must take care lest the heuristic method encroach upon what properly belongs to the presentation. All the subject-matter that the pupil may be expected to be familiar with, should be treated according to the heuristic method, and the teacher should never say anything that the pupil might say himself and never give him anything that he might discover by himself.[2] The teacher should try to discover all the points of contact between the subject-matter of the presentation and the pupil's mind and interests, and consequently the heuristic method can be applied successfully only after the teacher and pupils have been working together for some length of time. The home and local conditions that admit of being connected with the matter to be presented, should be kept in mind throughout the presentative instruction.

2. Whatever sensuous materials belong to a subject should be taken into account when planning the presentation of the respective subject. Of them it is true what Horace says in his *Art of Poetry:*

> "Most true, whate'er's transmitted through the ear
> To mind and heart will never come so near,
> As what is set before the eyes, and each
> Spectator sees brought full within his reach."[3]

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[1] *Supra*, ch. XLVIII, 5. [2] *Supra*, ch. XLVI, 4.

[3] *Ars Poetica*, 180 ff.; "*Segnius inritant animos demissa per aurem, Quam quæ sunt oculis subiecta fidelibus et quæ Ipse sibi tradit spectator.*"

Pictures, cards, and other visual aids should be treated separately and in most cases before the presentation proper. They should be treated thoroughly, as they will otherwise distract rather than prove useful. Occasionally, a mere reference to the actual environment or to local conditions will infuse a new spirit and a deeper interest into the matter presented. The instruction in geography, especially, should use the impressions of the moment: "a heavy fall of snow may suggest a reference to the climatic conditions in the Arctic and Antarctic zones; a heavy rain may serve to recall the rainy seasons of the tropics; a solar or lunar eclipse may suggest the problem of ascertaining what countries are witnessing it at the same time as we." Certain memorable days of the year may be used in history teaching as similar points of contact. The teacher of history, if wide-awake, will not allow the ides of March, or the days from October 16th to the 18th and other noteworthy days[1] to pass without referring to the historical events connected with them. He will therefore keep a school calendar of "days and deeds to memory dear." A story, on the other hand, can be made doubly interesting by showing pictures of the chief places mentioned. A clear and vivid description will often produce the same effect. Cicero remarked that a place will recall most strikingly the persons and events connected with it. The vividness of Ovid's narrations may be traced in good part to his happy use of the local element; witness such turns of expression as: "*Ipse locum vidi.*"

The narration is the most effective element used in presentative instruction. Unity of action and place is very important for the narrations to be used in this kind of instruction. The beginning of the narration should plunge *in medias res*, as Horace says, or, at the least, be catchy and interesting. The development should be that of the epic; the situations and events should follow naturally from each other, so that the review may find resting-points, which, however, lie in a continuum. The end of

[1] The teacher of United States history may find the following noteworthy. All our important wars, except that of 1812, began in April; and generally the nineteenth of the month was the day that decided the issue of war or peace. April 19, 1775: Battle of Lexington and Concord; first blood of the Revolution. April 19, 1861: Sixth Massachusetts Regiment fired on at Baltimore; first blood of the Civil War. April 19, 1898: Congress declares Cuba free and independent, and demands withdrawal of Spanish troops; this made war certain. April 6, 1917, Congress passed a declaration of war against Germany. For a Catholic historical calendar, see *Course of Christian Doctrine, Teacher's Manual*, Philadelphia, 1904, pp. 160-164.

the narration should, in accordance with the genetic principle, be such as connects the various threads of the plot, and it will largely determine the selection of the details (ch. XLII, 5). The story is a valuable asset of instruction and a capital of which the teacher should make the most profitable use. The teacher who can do justice to a story, approaches the rhapsodist. The pupils will not only listen to him, but will hang breathlessly upon his every word, as upon a rhapsodist's; and so the teacher will not only win their interest, but infuse into their souls sympathy with, and enthusiastic devotion to, what is great and noble.

The strict unity of the narration is impossible in the description, as it can not show how one thing follows from another; still it can demonstrate how the one is adapted to the other. The best material for descriptions is the organic and whatever can be studied like the organic. Lessing would reserve the description of the coexistent to the plastic and graphic arts and let poetry and verbal descriptions depict only what is successive. But this view is untenable in the light of what can be accomplished by literary art. Descriptions may be truly poetical and leave impressions similar to those created by the narration—provided that the color or tone of the description preserve the unity of the whole.

3. In his presentation the teacher may profitably follow the points which the rhetoric of the ancients describes as indispensable to the orator ("*res, quas oratorem habere oportet*"): 1. invention of thought, εὕρεσις, *inventio;* 2. order of arrangement of thought, τάξις or οἰκονομία, *dispositio;* 3. style, λέξις, *elocutio;* 4. memory, μνήμη, *memoria;* 5. elocution or delivery, ὑπόκρασις, *actio.*

With regard to the invention of thought, the teacher must provide, in the first place, all the material that the subject calls for. Young teachers, however, rest satisfied with providing this material, but do not sift and arrange it with respect to their pupils. But they should arrange the material in accordance with the following questions: What among this mass of material is such as my pupils can grasp, elaborate, retain, and apply? After a few years' experience in the schoolroom, the teacher will spontaneously sift his material somewhat, but he will hardly discover by himself the further need of correlating it with what is now occupying or has occupied the pupils' attention, *i.e.*, the need of correlating the new matter with their circle of thought and interest. There is, lastly, an æsthetical element that must

not be overlooked. Despite all the variety of materials and all the considerations governing its selection, the subject-matter must possess a certain unity. The first rule that poetics insists on, is the following: "Whate'er you write, let it be simple, homogeneous, one."[1]

The proper arrangement of the material collected also demands that what is suggested by the subject itself—when properly examined—be given the first place. In this regard we should follow the series that we outlined in the last chapter (ch. L, 8), and which are patterned after organico-genetic materials. As the skeleton is not visible in the organic body, so in the presentation the outline or plan should not be too conspicuous. Hence the thought-element, which the plan represents, and which must, like the skeleton, support the whole structure, should be concealed beneath concrete materials. The material should, furthermore, be so arranged as to represent a continuous growth in intensity, a climax—an important point for final success, because the attention is naturally weakened in the course of a long strain—and so the striking elements should be reserved for the latter part of the presentation. Horace has aptly illustrated this psychological fact:

> "A flash that ends in smoke is not his (the good poet's) aim,
> But out of smoke to bring resplendent flame,
> Through which the marvels of his tale shall gleam."[2]

However, in some cases, *viz.*, whenever the nature of a subject does not admit of a climax, this rule must be ignored. But the presentation of any and every subject-matter must be such as to possess both logical and æsthetical unity, so as to admit of being grouped, not only in a system, but also in a picture.

4. The style of the presentation should follow Aristotle's rule: "In respect to diction, the ideal for the poet is to be clear without being vulgar."[3] The teacher can not be understood unless he express himself clearly; and he owes it to his pupils, who must respect him as a model in all things, to keep his language free from slang and cant. Yet he should not strive for ornament, but should cultivate a plain style. He should bear in mind that every class period is to be a lesson in the correct

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[1] *Ars Poetica*, 23: "*Denique sit quidvis simplex dumtaxat et unum.*"

[2] *Ibid.*, 143: "*Non fumum ex fulgore, sed ex fumo dare lucem.*"

[3] *Art of Poetry*, 22: λέξεως δ' ἀρετὴ σαφῆ καὶ μὴ ταπεινὴν εἶναι.

use of the mother-tongue.[1] The old school saying, "*Rem tene, verba sequentur*,"[2] should govern the teacher's presentation as well as every other presentation.

The ancient orators gave special attention to the memorizing of their written orations, but for the instructional presentation this is not necessary. Still, the young teacher must be on his guard lest he lose the thread of what he is dealing with, and lest he, especially when striving to secure the co-operation of his pupils, leave his subject. But a careful examination of the subject as a preparation for the class period will generally suffice, and there is no need of special memory helps. The memory helps to be used by the pupils have been treated above.[3]

The efforts made by the teacher to secure the co-operation of his pupils represent in instructional presentation a factor that is akin to the orator's delivery. The young teacher will find this task of securing the pupils' co-operation as difficult as the young orator finds the delivery. He will in the beginning find his pupils a quite unwelcome and uncomfortable addition, and will consider the duty of exchanging the monologue for the dialogue very irksome. Still, a presentation, though perfect in all other points, may fail completely for want of the proper co-operation on the part of the pupils. With regard to presentative instruction we must recall that the very idea of instruction implies that the content of knowledge be not only offered to the pupils, as is done in teaching, but actually worked into their minds.[4] To this end, however, all entrances to the mind must be thrown wide open and all points of contact must be made accessible. To do all this is the duty of the didactic technique. But in the case of a larger number of pupils, the art of education demands that their co-operation be secured, not only in a general way, but in such a manner as is best adapted to the character and ability of each individual and as will redound to the greatest benefit of the largest possible number. In this way the class will be converted, one may say, into a voluntary co-operative association with each pupil a stockholder and a sharer in the dividends.

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[1] *Supra*, ch. XXII, 3 and XXXVI, 3.

[2] C. Jul. Victor, *Ars rhet.*, 1.

[3] *Supra*, ch. L, 3.

[4] Ch. XXXIV, 3.

CHAPTER LII

Example of Presentative Instruction

1. For illustrating the procedure of presentative instruction we have selected a subject which is well adapted for demonstrating at the same time the principle of the correlation of the school branches (ch. XXXVI), *viz.*, the Christianization of Germany. This subject lies on the borderland of the instruction in language, history, geography, and religion, and because it does not entirely belong to any of these subjects, it rarely receives adequate treatment. We are presupposing pupils of the sixth gymnasial class, who have studied the political history of the period and the development of the primitive Church, before the history teacher takes up the present subject. The teacher will find much helpful information in the collection, which has unfortunately been discontinued, *Die Geschichtschreiber der deutschen Vorzeit in deutscher Bearbeitung*, Berlin, 1849.

The teacher must first make it clear that the conversion of Germany is only a member of a long series of missions, which began with the conversion of the Franks and ended with the conversion of the northern and eastern nations. Accordingly, the conversion of the Franks, the Irish, and the Anglo-Saxons will have to be treated as an introductory subject. In this introduction the teacher should employ the heuristic method in bringing home to his pupils such concepts as mission, diocese, and monastery. The missionary activity of St. Boniface will be the main topic and the centre of the presentation, and this circumstance offers the advantage of bringing the personal element into the foreground. The teacher must thus deal with personal deeds, ideals, and sacrifices, and all of this holds the attention readily, and admits, moreover, of being turned into a moral force. However, before taking up this topic, the earlier state of Christianity in Germany and the activities of the missionaries before the time of St. Boniface should be briefly treated. A third part, finally, will show how Charlemagne and the Saxon kings continued the work of the missions. The whole subject should naturally conclude with a brief sketch of the ecclesiastical provinces of Germany, which received their definite shape about the year 1000. In as far as they represent the final outcome of all the missionary activity in Germany, the presentation may take the form of a genetic development.[1] Attention should be

[1] *Supra*, ch. XLII, 5.

given throughout to present-day results of the early missionary activity, and mention should be made of the churches, monuments, or other still extant memorials of the missionaries' activity.

2. A historical map of Europe in the year 500 will show the Franconian Kingdom as embracing northern France, Belgium, and almost the whole territory of the Rhine. About in the centre is Rheims, where the Archbishop, St. Remigius, the Apostle of the Franks, baptized King Clovis, on Christmas Day, 496. Clovis had been converted to the Christian religion by his wife Clotilda, but he embraced it only after the Battle of Tolbiac (Zülpich, near Bonn), having, like Constantine the Great, vowed this upon the condition of gaining a victory. The words that Remigius addressed to Clovis before baptizing him, have come down to us: "*Mitis depone colla, Sigamber, adora quod incendisti, incende quod adorasti.*"

A look at the map will show the importance of this conversion for the spread of Christianity. Italy and the Alpine countries were in the hands of the Ostrogoths; Spain and southern France, in the hands of the Visigoths; the Rhone country, in the hands of the Burgundians; and all these nations professed the Arian heresy. In England Christianity was suppressed by the Anglo-Saxons. In certain Germanic countries outside of the Frankish Empire, as in Bavaria, Christian congregations existed, indeed, but they lacked organization and were partly demoralized. Thus the conversion of the Franks was the first and most important foundation for the German mission.

But the British Isles also played an important rôle in the conversion of Germany. Ireland had been converted by St. Patrick (d. 465), and the Anglo-Saxons in England were converted through the efforts of Pope Gregory I. The teacher should not fail to recall Bede's characteristic account of Gregory's casual encounter with English slaves in the Roman market place. Being struck with their noble appearance, Gregory inquired the name of their nation, to which they replied, "*Angli.*" Whereupon Gregory remarked, "*Bene, nam angelicam habent faciem et tales angelorum decet esse cohæredes.*" To the further inquiry from what part of England they came, the slaves replied, "*Deira*"; and Gregory commented, "*Bene, de ira dei eruti.*" Their King's name they gave as Ælla, which Gregory interpreted thus, "*Alleluja oportet cantari.*" In the year 596, just one hundred years after the baptism of Clovis, St. Augustine, the Apostle of the

Anglo-Saxons, set out with forty Benedictine monks for Kent, where he baptized King Æthelbert, who had been prepared for the reception of Christianity by his Frankish wife Bertha. Augustine became the first Archbishop of Canterbury.

In the meantime the Frankish Empire has also increased in extent, for in 530 the Franks had subjugated the heathen Thuringians and in 534 the Burgundians. Among the many dioceses included in this greater Frankish Empire, we must look for the beginnings of the later ecclesiastical provinces of Germany. They are, first, the Rhenish dioceses summed up and characterized in the old saying: "Kostnitz the largest, Bâle the fairest, Strassburg the noblest, Speyer the most pious, Worms the poorest, Mainz the most venerable, Trier the oldest, Cologne the richest." The other dioceses are: Metz, Liége, Augsburg, Brixen, and Chur. The historical map shows that the German mission would have to embrace Allemannia or Swabia, bordering on the Lake of Constance, and Bavaria, the country of the Inn and the central Danube territory, in which countries the Christian religion had been preached. But the German mission was to include also the following countries that were still entirely heathen: Eastern Franconia, along the Main; Thuringia, between the Main and the Elbe; Saxony, between the Ems and the Elbe; and Friesland, between the mouths of the Rhine and the Weser. Slavic peoples lived east of the Elbe and the Bohemian Forest; and the Avars, in the southeast.

3. After this survey of the mission territory, the teacher should deal with the Christianizing organs and agencies. Priests, monks, and hermits that took up their abode in the heathen countries, were the first to preach the Gospel. But the Christian religion obtained a firm foothold only after churches were built and congregations organized; and the bishoprics and monasteries became the centres of organized activity. The bishop was the head and the soul of the diocese. He preached the Gospel, and taught and confirmed the faithful. He directed the education and training of the clergy, ordained his priests, placed them in charge of parishes, and controlled their teaching and morals. With respect to the rites of public worship, his cathedral church came to be considered the model of the other churches. In the early times, the city bishop, who had charge of the city clergy, was assisted by a rural bishop, who had charge of the rural parishes. The archbishop or metropolitan was at the head of the ecclesiastical province. The monasteries, founded for the most part by Benedictines, were primarily intended for

retreats of the monks, and were hence located in solitary and unsettled places. The monks cleared the wilderness for cultivation and thus became the teachers of agriculture for all those who settled in the vicinity. Eventually the monastery developed into an abbey; and the settlement, into a market and town. The monastery cell became the home of art and science. Schools were opened, in the first place, to train young monks. The abbey church became, like the cathedral, the model of the churches in the neighborhood. New monasteries branched off from the parent foundation, missionaries were sent out into new territory or placed at the disposal of the bishops. The missionary activity of to-day presents similar features, and these should be noted for the sake of comparative study. The teacher should not miss the opportunity to connect the new with what the pupils know in this respect from their own experience, as this will add the heuristic element, which is a good preparation for the subsequent historical narrative.

During the sixth and seventh centuries, the missionaries in Germany were mostly Franks, Irish, Scotch, and Anglo-Saxons. The Frankish missionaries labored chiefly in Bavaria; the Irish and the Scotch, chiefly in Swabia; and the Anglo-Saxons, chiefly in Friesland—the Anglo-Saxons being bound to the Friesians by the relationship of both language and blood. Rupert, a scion of the royal house of the Franks, was consecrated Bishop of Worms, and subsequently (c. 580 or c. 680) became the Apostle of Salzburg, which belonged at the time to Bavaria. Having been called to Ratisbon by Duke Theodo, he baptized Theodo and all of his court and a large multitude of common folk; but from Ratisbon he passed on to Salzburg, where he founded the Monastery of St. Peter, which he peopled with twelve of his disciples of Worms. This number twelve, in memory of the twelve Apostles, is frequently met with. Rupert likewise founded a cloister for women, on the Nonnberg in Salzburg. Salzburg holds Rupert's name in blessed memory, and his foundations in that city have had a continuous existence down to our own times, and enjoy the distinction of being the oldest in Austria. A shrine, sacred to Wodan and located on the Inn, Rupert converted into a chapel of Our Lady and built a hermitage beside it. In time this grew to be the famous shrine of Our Lady, Altötting, known as the "German Loretto," which treasures many antiquities from the time of its founder. In the evening of his days, however, Rupert returned to Worms, where he died on Easter Day, after singing a highmass.

Duke Theodo was the patron of a second missionary, Emmeram, the rural bishop of Poitiers. Emmeram was on his way to convert the Avars, but Theodo persuaded him to remain in Ratisbon, and from this place as his headquarters he began his missionary activity in 652. He was martyred while journeying to Rome. A monastery, named in his honor, was built on the site of his grave in Ratisbon, and the valuable library of this foundation has been preserved and is at present in Munich. Theodo also invited the Frank Corbinian, founder and Archbishop of Freising (d. 730). The Scotchman Kilian labored among the Franks in the Main country; he converted Duke Gozbert, and was the first Bishop of Würzburg. But when he censured Gozbert for marrying the widow of his deceased brother, he was murdered in 689, thus sharing the fate of John the Baptist.

Columbanus, an Irishman, first preached in Burgundy, but since 611 he labored in the country on the Lake of Constance, and later went to Italy, where he died. Gall, one of his twelve companions, had to be left behind (because of illness and old age) in the care of the pastor of Arbon, on the Lake of Constance. Having recovered, he built a hermitage in the forest, near a waterfall of the Steinach River. Duke Conzo, having learned of the Saint's healing the sick, called him to deliver his daughter from the demon by which she was possessed; and in gratitude for the delivery, he gave him rich gifts. This was the beginning of the Abbey of St. Gall, which later became so celebrated a home of the sciences and arts, especially of music. Gall refused the episcopal see of Constance and the abbatial dignity of Luxeuil, and died October 16, 646, at Arbon. The Abbey of St. Gall was suppressed in 1802, but the library has been preserved and the church raised to a cathedral church.

Several Anglo-Saxon missionaries labored among the Friesians, but only Willibrord, authorized by Pope Sergius and assisted by the Franks—the latter having under Pepin of Heristal (d. 714) subjugated a part of the country—succeeded in gaining, in 692, a foothold. He founded the episcopal see of Utrecht, and was made its first bishop, assuming the name Clement. Archbishop Wulfram of Sens undertook the conversion of those Friesians who had not yet been subjugated. He had almost won over the warlike ruler Radbod, but when the latter inquired whether he could, though a Christian, sojourn after death with his forefathers, the Saint had to answer in the negative; whereupon Radbod refused to be baptized. But, after Radbod's death, in 719, Charles Martel (714–741) conquered the whole

country and thus prepared the way for Willibrord to continue the work of conversion.

4. At this point the activity of Winfrid must be taken up. We shall briefly indicate such facts as characterize him and his work and as will at the same time appeal to the young. Born in 680 at Kirton, in Wessex, he early showed an inclination for the religious life. He eagerly questioned the monks, who were frequent callers at his father's house, about God and heavenly things. But his father strenuously opposed his son's vocation, and it was only an illness and a marvelous recovery that won his consent; whereupon Winfrid was entrusted as an oblate to the monastery at Exeter. But it was at the Monastery of Nhutscelle that he completed his studies with high honors. He was placed in charge of the monastic school of Nhutscelle. Here he wrote a Latin grammar and a work of prosody, and preached, besides, with great success in nearby churches. Having been ordained priest, he begged his abbot to be sent as a missionary to the Friesians. The abbot refused at first, but finally consented amid tears and prayers. Winfrid set sail in 716, but the war between Charles Martel and Radbod forced him to return to his monastery, where he was elected abbot.

But after two years he resigned this office, with the bishop's consent, and again set out, this time for Rome to meet Pope Gregory II., who was himself a Benedictine. The Pope recognized the wonderful power of the humble monk, and assigned to him the German territory east of the Rhine. Winfrid began his activity in Thuringia, but after Radbod's death he labored in Friesia, assisting Bishop Willibrord who wished him to be his successor. But true to his calling, he returned to central Germany. At Amöneburg, in Upper Hessia, he converted the brothers Detric and Dierolf, two chiefs, and founded a monastery at the same place. An altar in the cemetery recalls even today the first cell built by Winfrid. On the Christ Hill, or Kesterhill, near Marburg, he built the first church of that territory over a heathen temple, whose remains are said to be still extant. The legend relates that the Saint once stamped, in righteous anger, upon the ground in this place, and that the imprint of his foot is visible to the present day.

Winfrid sent a report of his activities to Rome and was recalled thither in 723. Pope Gregory II. made him bishop of the churches to be established in Germany, and gave him the name Boniface. Furnished besides with recommendations from Charles

Martel, he returned to Germany and took up his work again with quickened zeal. The Hessians were filled with amazement when the Saint felled, in the presence of a great concourse of people and without suffering any harm, an oak sacred to Donar. Out of the wood of this tree Boniface built a chapel and dedicated it to St. Peter. In Thuringia he founded a monastery at Ohrdruf and built a church at Altenberge, whose site is marked by a monument erected in 1811. Boniface called to his assistance several of his friends from England, among them Lullus, later Archbishop of Mainz, Burchard, later Bishop of Würzburg, and Willibald, later Bishop of Eichstädt. Zealous nuns, too, as Lioba, Walburga (daughter of King Richard), Thecla, and others—who had previously aided the missions, for example, by transcribing the Bible in gold—now came from England and opened convents: Lioba in Bischofsheim on the Tauber and Walburga in Heidenheim, near Eichstädt.

5. In the meantime Gregory III. had been made Pope, and in 731 he appointed Boniface archbishop and authorized him to appoint and consecrate bishops for all places where the number of the faithful warranted it. On his third journey to Rome, in 738, Boniface was received with high honors, and pilgrims from all lands gathered around him. The external organization of the Church in Germany dates from this time. Returning to Germany, Boniface organized, in 739, the four Bavarian dioceses: Salzburg, Freising, Ratisbon, and Passau. In East Franconia he organized the dioceses Eichstädt and Würzburg; in Hessia he organized the diocese of Buraburg, near Fritzlar; in Thuringia, the diocese of Erfurt; but Buraburg and Erfurt were short-lived. The so-called German Council was convened in 742 for the purpose of enforcing ecclesiastical discipline and of abolishing heathen customs. A second Council prescribed the formula of abjuration: "Of Donar and Wodan and Saxnot and all the demons that are their associates." It was no easy task to reform the demoralized parishes, where heathen and Christian elements were joined in a bad union, and Boniface had as much difficulty in weeding out the cockle as in sowing the good seed. The local and national elements he spared as much as possible, and advised his clergy to teach the faithful German prayers, to read the Epistles and Gospels in German, and to preach German sermons.

These extensive activities did not prevent the Apostle of Germany from giving his attention to a smaller undertaking,

upon which he seems to have set his heart, the founding of the Abbey of Fulda. In Bavaria he had become acquainted with a boy of noble birth, whose character and manner recalled his own childhood. He had him educated, first in the monastery of Fritzlar and then at Monte Cassino, the mother-house of the Benedictines; and he was happy to see his fondest expectations realized. Eigil, Sturm's biographer, says of the boy: "By day and by night his thoughts were upon the law of the Lord; endowed with deep feeling, a subtle mind, prudence in speech, and fair of form, noble in bearing, pure in morals, he could not but win all hearts with his amiability, modesty, gentleness, and cheerfulness." After his ordination to the priesthood and appointment to the preaching office, Sturm asked Boniface for leave to found a monastery, and this was gladly granted.

"Sturm left Fritzlar with but two companions and penetrated into the wilds of the beech-forest. For three days the small party journeyed on through the forest and saw nothing but the heavens above and the high trees. On the third day they arrived at a place now called Hersfeld. Here they built huts of bark and remained a long time, praying and fasting. But when Boniface heard of their place of abode, he commanded them to penetrate still farther into the forest, as the proximity of the heathen Saxons appeared too dangerous. So Sturm journeyed onward and finally arrived at the Fulda River; and a place not far distant from its source appeared to be best adapted for a monastery site. He returned to his two companions, and having brought them to the Fulda, they set to work to make a clearing. Two months later Boniface came to them, and with solemn prayers laid the cornerstone of Fulda Monastery. This took place in 744. The monks adopted the Benedictine rule and the ways of the Italian monastics. They vowed obedience and chastity, and spent their time in prayer and manual and mental work. Fulda became the centre of Christian culture in Germany, and rich gifts began to pour in from all sides. Even under Sturm, its first Abbot, the monastery had 400 monks."[1] Boniface visited Fulda every year to rest from his labors; but his place of residence was Mainz, for the Pope had made this city the primatical see of Germany.

6. Boniface was highly esteemed by the Frankish kings. When Charles Martel began, after his victory over the Arabs

[1] Rudolf von Raumer, *Die Einwirkung des Christentums auf die althochdeutsche Sprache*, 1845, pp. 187 ff.; the material is drawn from Eigil's *Life of Sturm.*

at Poitiers, in 732, to confer bishoprics and abbacies upon his generals, the Saint resisted him bravely and so prevented the sacrilegious use of church property. Boniface crowned Pepin the Short, son of Charles Martel, at Soissons, and it is said that he blessed Charlemagne as an infant. And thus he may be associated with all three founders of the Carolovingian Empire.

"The personal work of Boniface was now accomplished; like the old man Simeon, his eyes had seen the object of all his ambition, of all his life-long toil, the salvation prepared by God for this new Israel. He, too, had now no desire save that of departing in peace to his Lord. But could the entering into peace, for such an Apostle, be by other gate than that of martyrdom? He understands this well; his hour has sounded; the old warrior has chosen his battlefield. Friesland is still pagan. Half a century ago, at the opening of his apostolic career, he had avoided this country, in order to escape the bishopric which St. Willibrord, at that early date, was anxious to force upon him; but now that she has naught save death to offer him, he will enter this land. In a letter of sublime humility, prostrate at the feet of Pope Stephen III, he remits to the correction of the Apostolic See, the awkward mistakes, as he terms them, and the many faults of his long life. To Lullus, his dearest son, he leaves the Church of Mainz. He recommends to the care of the Frankish King the several priests scattered all through Germany, the monks and nuns who from distant homes have followed him hither. Then ordering to be placed among the few books which he is taking with him, the winding sheet that is to enwrap his body, he designates the companions chosen by him for the journey, and sets out to win the martyr's palm."[1]

The companions on this last journey were Bishop Eoban of Utrecht, three priests, three deacons, and four monks; and their number was later still further augmented. They baptized thousands of Friesians, and pitched their tents, about the Feast of Pentecost, on the Borha River, where the converts were to assemble to be confirmed. A great multitude was seen to approach, and the aged Archbishop went out to welcome them. But they were armed pagans. Boniface's companions wished to offer resistance, but the Saint forbade it and, holding the Gospel book over his head, he received the deathblow. Fifty-two of his companions received the martyr's palm on the same day, June 5, 755.

[1] Guéranger, *The Liturgical Year*, transl. by the Benedictines of Stanbrook, London, 1900, Time after Pentecost, Vol. III, p. 113.

The remains of Boniface were solemnly interred at Fulda. Upon Lullus' suggestion, Willibald wrote the Saint's life. He made the first draught on wax tables and only after several men who had been intimate friends of Boniface, had looked it over, was it written on parchment.[1] Fulda, whose abbey was raised, in 1752, to a bishopric, preserves many relics of Boniface. "*Verbum Dei manet in æternum*," is the text engraved on his monument. On the feast of St. Boniface, June 5, "vast multitudes assemble in Fulda, to do honor to the Apostle and Founder of the Church in Germany. Entire parishes may be seen coming and going, amid the singing of hymns and the ringing of bells. From early in the morning till late in the night, the pious chants are heard from the Saint's tomb, while the uncounted numbers of the faithful surge toward the altar over the grave, eager to kneel, if possible, before it, or, at the least, near the walls of the cathedral."[2]

7. The missionary activity of this hero of Faith was continued by a hero of war. Charlemagne undertook the conversion of the Saxons, who had hitherto offered as fierce an opposition to the power of the Franks as to the efforts of the missionaries. On his first expedition, Charlemagne took Eresburg, a stronghold located in the southern Teutoberg Forest and about five miles from the Donar Oak of Geismar. He also burned the Irminsul, a sacred column or tree, the national shrine of the Saxons, and stationed garrisons at different places. But while Charlemagne was engaged in Italy in a war against the Longobards, the Saxons drove off the Frankish garrisons and invaded the Frankish country. Charlemagne returned, defeated the rebels, built strong castles, and made a treaty in the Reichstag at Paderborn, in 777, with the leaders of the Saxons, the latter promising to subject themselves and not to resist the efforts of the missionaries. Yet no sooner had Charlemagne gone on his Spanish crusade, than the Saxons broke the treaty, harried the territory of the Franks, and forced even the monks of Fulda to flee. But the King returned, conquered the country to the Elbe, mapped out the boundaries for the dioceses to be established, and settled Christian priests among the heathen. However, when he enlisted Saxons for his expedition against the Slavic Sorbs, the Saxons slew the Frankish soldiers on the

[1] Willibald's *Vita S. Bonifacii* has been done into English by G. W. Robinson, Harvard University Press, Cambridge, 1916.

[2] Daniel, *Deutschland*, 1863, p. 1073.

march. This was avenged by Charlemagne by the "Massacre of Verden," where 4,500 Saxon prisoners were executed; and in the Battle of the Hase the Emperor broke the resistance of the enemy. Wittekind and many nobles were baptized and the masses soon followed their leaders. The oppressions, however, connected with the collecting of the tithes provoked another rebellion, and it was only in 805 that the nation was completely subjugated.

The measures employed by Charlemagne in Christianizing the Saxons were severe. The refusal of Baptism, return to heathenism, and violations of ecclesiastical laws were capital crimes. The learned councilor of the King, the Anglo-Saxon Alcuin, as well as Arno, Archbishop of Salzburg, advised less rigorous measures. "Use persuasion," they said, "rather than violence. Be a teacher of Faith and not a tithe-collector." But Charlemagne was governed by political motives. He wished to incorporate the country as soon as possible into his empire.

Of the dioceses organized by Charlemagne in the country of the Saxons, Osnabrück is considered the oldest; it was established in 786, though a church had been built there previously. The second diocese was Münster, where the Friesian Ludger had been active since 791. Ludger "built a common home for himself and his associates, a school for the training of the clergy and for the education of children, and a small church; around the whole he built a wall. One church was soon found insufficient, and so he built a second beyond the Aa River. Werden Abbey, on the Ruhr, became a second ecclesiastical centre. In 802, Ludger was consecrated Bishop; he died March 25, 809, and is buried in Werden. His feast is celebrated in the Münster country on the Wednesday after *Jubilate* Sunday."[1]

Paderborn was raised by Charlemagne, not only to an ecclesiastical centre, but also to a political capital. The Reichstag for the East Saxons often convened here, and in this city Charlemagne also received the Arabian ambassadors from Spain. Pope Leo III. fled to Paderborn, when driven from Rome, in 799, and in the same city the plans were laid for the reëstablishment of the Roman Empire. Minden was made a diocese for the country of the Angrians. But Verden, Bremen, and Halberstadt became organized dioceses only after the time of Charlemagne.

The new dioceses were made suffragan sees partly of Mainz and partly of Cologne. Salzburg was made a metropolitan see

[1] Daniel, l. c., p. 866.

besides Cologne and about the same time; and as Trier had been from early times the seat of an archbishop, there were four archdioceses in what later became known as Germany. The cathedral chapters, consisting of priests who led, after the manner of the monks, a common life and followed a certain routine in their work and prayer, were established at this time in connection with the cathedral churches of the above-mentioned sees. Their rule of life can be traced back to St. Augustine, but had been recast, in 760, by Bishop Chrodegang of Metz and was called canon, whence the members of the cathedral chapters came to be known as canons.

That Charlemagne was deeply religious—a fact which may, to some extent, explain the violent methods he adopted in Christianizing the Saxons—is attested by his biographer Einhard: "He revered and loved the Christian religion, in which he had been trained from his early boyhood. Hence he built the splendid house of God at Aachen and adorned it with gold and silver and with candles and with brass chancels and doors. As he could not obtain the columns and marble from any other place, he had them brought from Rome and Ravenna. (The palace chapel with these columns, forming an octagon, is still standing and is a specimen of the Byzantine architecture of the period.) He assisted, as often as his health permitted, at the church services, in the morning and evenings, at the choir service at night and at the Mass.... He gave much attention to the improvement of the reading and singing in church, for in both these subjects he was well instructed, though he never read in public and sang only in a low tone and that in the choir." The hymn *Veni Creator Spiritus* is attributed to Charlemagne; and the singers whom he called from Rome, founded the song schools in Metz and St. Gall.

The son of Charlemagne, Louis the Pious, succeeded him on the throne, and enriched and increased the spiritual foundations of his father. For East Saxony he founded, in 822, the diocese of Hildesheim. A legendary account traces the founding of this diocese to an incident that happened to the Emperor while on a hunt. It is alleged that Louis lost his way in a forest and that he fell asleep under a rose bush, after having vowed to build a church, if he found a way out of his difficulty. On the outer wall of the crypt, a rose tree extends even to day to the height of the roof, and documents vouch for its being 800 years old. For the countries east of the Elbe, Louis founded the diocese of Hamburg, which was incorporated, in 849, with the

diocese of Bremen into the archdiocese of Bremen. On the Weser he built a monastery, which he peopled with monks from Corbeja Abbey in Picardy, and which was consequently called Corbeja Nova, Corby. It was rich in manuscripts, and in its scriptorium Tacitus alone was, by special provision, copied annually ten times.

In the ninth century, the French clergy received their theological training chiefly in Tours, where Alcuin had labored; and the clergy of central Germany, chiefly in Fulda, where Sturm and his successor Baugulf upheld the traditions of St. Boniface. Rhabanus Maurus, the *præceptor Germaniæ*, the most learned German of the age, had been educated in both places. He rendered valuable services to the Church by his theological writings and the establishing of schools. Of his Latin hymns, the one in honor of the Angels, *Christe, sanctorum decus angelorum*, has been introduced into the liturgy. He died in Mainz, his native city, in 856, "honored by the Frankish kings and lamented by the poor of the country." His maxim was: "*Nemo perfecte sapit, nisi is qui perfecte diligit.*"

8. Otfried, a pupil of Rhabanus and a monk in the Monastery of Weissenfels in Alsace, is the author of the *Evangelienbuch*, a rimed version of the Gospels, which he wrote under Louis the German. It is a result of St. Boniface's order to the clergy, commanding them to use the vernacular in preaching to the people. In literary and poetical value, it is inferior to the Gospel epic, written under Louis the Pious by an unknown Anglo-Saxon writer and entitled *Heliand*, *i.e.*, "Saviour." "The generation of the Saxons who had been converted by the sword, had not yet died out when the singer sang his song of the Lord of heaven and the Child of Peace. With his faith and all his will, the author stands in the midst of a great nation that is distinguished for seriousness, daring, purity, and pride, and which shared his joy in his own dear Lord and Master, the powerful Christ."[1] The union of Christian and national elements produced a warmth of feeling and objectivity of treatment such as no other work possesses.

With the conversion of the Saxons the Christianization of the Germanic tribes was complete, and thus the missionaries could proceed to the Slavs, who had settled east of the Elbe in territory that had previously belonged to the Germans. The ground for the missionaries was prepared by the Saxon Emper-

[1] Vilmar, *Deutsche Altertümer im Heliand*, 1845.

ors, particularly by Henry I., the builder of cities (919–936). He founded the town and abbey of Quedlinburg, and is buried in the abbey church. The towns Merseburg and Meissen he fortified, and Brandenburg he took from the Slavic tribe of the Hevelli. His great successor, Otto I (936–973), established bishoprics at the three places just mentioned, and these new dioceses were, with the dioceses of Havelberg and Zeitz (transferred later to Naumburg) made suffragan sees of the Archdiocese of Magdeburg, which was established in 962, and which is the greatest of Otto's foundations. Otto secured special privileges for the new metropolis and singled out the city for special favors; and it is fitting that he found his last resting place there. The diocese of Oldenburg, which he established and which was later transferred to Lübeck, belonged to the Bremen Province. Of his successors, St. Henry II. (1002–1024) was most active in promoting the interests of the Church. The establishment of the diocese of Bamberg and the building of its cathedral, which was consecrated by Pope Benedict VIII, are his work; and he, too, is buried in the church he built.

Of the councilors of Otto I, special mention must be made of the Swabian monk Ekkehard, surnamed Palatinus from living in the Emperor's palace. He had achieved fame as a savant and teacher in St. Gall and had taught the Swabian Duchess Hadwig Latin and Greek, when Otto made him tutor of his sons and always kept him near his person. He died in Mainz, in 990, where he was Provost of the Cathedral. Hermann, surnamed Contractus, was a second celebrated savant of St. Gall. He taught at Reichenau, and died in 1054. He was learned in many fields, and wrote poetry and composed music. His antiphon *Alma Redemptoris Mater* has been introduced into the liturgy, and the *Salve Regina* is also attributed to him by some historians. Bishop Meinwerk of Paderborn (d. 1036) labored in Saxony. His cathedral school is the subject of a song, whose beginning and conclusion read as follows:

"Studiorum multiplicia
Sub eo floruerunt exercitia....
Ludusque fuit omnibus,
Insudare versibus
Et dictaminibus (compositions)
Jucundisque cantibus."

Bishop Bernward of Hildesheim (d. 1022) was not only a faithful churchman, but was noted besides for his scholarship and artistic skill. The chandelier and the bronze doors of the Hildes-

heim cathedral are his handiwork. To the period of the Ottos belongs also the first German poetess, Hroswitha, Abbess of Gandersheim, who wrote in Latin hexameters about the founding of her abbey (856) and the deeds of Otto I. The folk poetry asserted itself beside this artistic poetry inasmuch as it contributed to the stock of German legends, which was completed about this time, and in which Christian traditions blended with national and local elements.

9. That the truths of Christianity had entered deeply into the daily life of the people, is further evidenced by the Christian proverbs, phrases, and words in general, which have, in part, come down to us, and which are, like the remaining churches, monuments of the age.

The results of the Christianization of Germany can be visualized by considering the state of the ecclesiastical provinces of Germany about the year 1000. At the head was the Archdiocese of Mainz. A diocese even in the Roman period, it was made the metropolitan see by St. Boniface. At the present time Mainz is still the seat of a bishop, but much of its former territory is now incorporated with the Archdiocese of Freiburg. Six of its suffragan dioceses dated from the Roman period. Four of these are still existing: Speyer, Augsburg, Strassburg, and Chur, while two, Constance and Worms, have ceased to exist. Two of the suffragan sees of Mainz were established by St. Boniface: Würzburg, prepared by Kilian, and Eichstädt. Four of the suffragan sees dated from the Carolovingian period, but only two of these are still existing, Paderborn and Hildesheim, while Halberstadt and Verden are no longer seats of bishops. The second province was Cologne, embracing the diocese of Liége, dating from the Roman period, the diocese of Utrecht, the foundation of Willibrord, and the foundations of Charlemagne: Münster, Osnabrück, and Minden, of which the last-named is no longer in existence. Trier was the third province, and embraced the Archdiocese of Trier, now a diocese, and the diocese of Metz. The Archbishops of Mainz, Cologne, and Trier were later made Electors of the Holy Roman Empire. Salzburg constituted the fourth province, and embraced the older diocese of Brixen, besides Freising, founded by Corbinian, and the dioceses founded by St. Boniface, Passau and Ratisbon (prepared by Emmeram), all of which are still in existence, with this one change that the Freising See has been transferred to Munich and has been raised to the rank of an archdiocese;

the dioceses of the East Alpine country were added later. The northern and eastern districts were subject to the Bremen and the Magdeburg Provinces, which have with their suffragan sees ceased to exist. Bamberg, being exempt, occupied a unique position, and is at present the archdiocese of Franconia.

The missions, of which the Christianization of Germany was but a part, began to extend, since the ninth century, to the northern and eastern nations, and the German dioceses and abbeys were the bases of supplies for these missionary expeditions. The Apostle of the North, Ansgar, was a monk in Corbey Abbey, and was later elevated to the Archbishopric of Bremen (d. 865). The first Bohemians were baptized in Ratisbon, and Bohemia belonged to the Ratisbon diocese till Prague received, in 973, its own bishop. The Bohemian Wojtech, who in baptism received the name Adalbert, was educated in Magdeburg and was the second bishop of Prague. Adalbert baptized the Hungarian crown prince Vaik, who is known in history as the Apostolic King of Hungary, St. Stephen. Adalbert preached the Gospel in Poland also, and was martyred in Prussia. The diocese of Gnesen, established in 968, belonged to the Magdeburg Province, and the brother of Adalbert, Radim or Gaudentius, was its first bishop. Bishop Otto of Bamberg made missionary journeys into Pomerania since 1124, and these were the beginning of the Christianization of that country.

10. The varied material admits of different combinations for the purpose of assisting the understanding and the memory. The subject-matter itself suggests some combinations, and a few of these may be briefly indicated here. The chronological order of the events can be best fixed in the memory by means of the following formula: 500 conversion of the Franks, 600 conversion of the Anglo-Saxons, 730 conversion of central Germany, 800 conversion of the Saxons, 900 conversion of the Slavs. The following is a comparative summary of the circumstances attending the conversion: the Anglo-Saxons were converted while lords of their land; the Thuringians, etc., while subject to the Franks; the Saxons had to be supplied at one and the same time with the ecclesiastical order and a new political order of things; and the Slavs had to submit to a foreign nation: hence the struggles in the Christianization of the Saxons and Slavs. The teacher may group whatever circumstances were favorable or unfavorable to the missions. Favorable circumstances were, for instance, the consciousness of religious

needs, the spectacle of the Christian achievements, the assistance of pious women, etc. But unfavorable were the attachment to the old religion, as in Radbod, or fierce passions, as in Gotzbert. All these topics will prove good material for oral and written compositions.

The Christianization of the Germans may well be compared with the efforts of the Roman Cæsars to subjugate them. In both cases, Rome was the moving force; and Gaul and Britain, the bases of supplies; and it is noteworthy that momentous events in both movements occurred at one and the same place; for instance, the Donar Oak and the Irminsul were near the Teutoburg Forest.

Boniface's three journeys to Rome are the chief points in his life: the first in 718, from which he returned an authorized missionary; five years later came the second journey, from which he returned a bishop; and fifteen years later came the third journey, from which he returned the primate of Germany. The date of Pepin's coronation, 752, recalls Boniface's relation to Pepin's father and son. The dates 744 and 755 are connected with Fulda: founding—burial. The Saxon wars may be summarized in the key-words: Eresburg, Paderborn, Verden, Hase. The relation between Boniface and his disciples may be visualized in a kind of pedigree: Boniface is the spiritual father of Sturm; the latter, of Baugulf; Baugulf, of Rhabanus; and Rhabanus is at the same time the spiritual son of Alcuin and the spiritual father of Otfried. Finally, we may add that the historical sayings found should be grouped and filed.

For correlating the subject with the pupil's circle of interest, the teacher should make use of poems, pictures, statues, etc. The mural paintings in the Benedictine church of St. Boniface, in Munich, represent the principal events in the Saint's life. All places that are of special importance for the German mission, have been celebrated in song and story. Even in the elementary German instruction, if it is based on local and national legends, the pupil will find many points of contact. But the advanced course will find new phases in the old material. Karl Simrock's collection, *Die geschichtlichen deutschen Sagen aus dem Munde des Volkes und deutscher Dichter*, will furnish much pertinent material. Many legends are connected with Corbey Abbey, and a whole cycle of tales has grown up about the Bamberg Cathedral. In Wolfgang Menzel's *Deutsche Dichtung*, 1858, Vol. I, pp. 290 ff., the teacher will find a conspectus of the legends dealing with the present subject. One of the most

charming legends, whose value is enhanced by its didactic elements, relates how St. Wendelin, son of a king of Scotland, first lived as a hermit near Trier, then became a shepherd, and finally rose to be Abbot of Tholey. The small town of St. Wendel grew up near his grave. The beautiful sketches of Führich are helpful aids to visualizing the legend.

CHAPTER LIII

Explanatory Instruction

1. The classics that are read in school, must be explained; hence the explanatory instruction. The explanation will vary with the kind of book that is read. A religious classic requires an explanation different from that of a profane classic. The religious classic must be explained theologically; and the profane classic, philologically. The object of the theological exegesis is knowledge, edification, and guiding principles for life; but the object of the philological explanation is linguistic knowledge. The theologian looks upon the book he explains as an authority in theoretical and ethical matters; but the philologist considers the literary classics as authorities in technical and æsthetical matters only. The principles underyling these two kinds of explanation must be duly distinguished and rightly understood, else we shall have, on the one hand, the philologist charging the exegete with reading his preconceived notions into the text, instead of accepting its obvious meaning; and, on the other hand, the exegete retorting that the philologist merely ascertains the author's precise meaning and criticises the aptness of his expression, but never stops over these grammatical and rhetorical inquiries, to examine into the truth or propriety of what is said. The teacher's explanation, which is didactic, should reconcile these opposite views, for he can not do justice to a text unless he employ a method that embodies elements of both philological and theological interpretations. When reading a profane author, the teacher must first proceed along philological lines; his first aim must be to find the objective meaning of the text; and the text should then be used as a source, not only of linguistic knowledge and technique, but also of varied knowledge of persons and things. But in reading even profane authors the teacher may not ignore the fact that all language and literature instruction must aid in developing the moral sense. He

must, consequently, apply the moral standard to the characters and conditions depicted in the classics, and supplement and correct particularly the ancient conceptions by means of the Christian world-view.[1]

The explanation deals with a larger or smaller linguistic whole as expressing some thought or embodying some intellectual content. It must deal with *what* is expressed as well as with *how* it is expressed, *i.e.*, with matter and form. Hence, we may distinguish the content-explanation from the linguistic explanation. Of these two kinds of explanation we may repeat what Erasmus says of the knowledge to be acquired from the reading of authors: "*Cognitio duplex: verborum prior, rerum potior.*"[2] Without a mastery of the linguistic forms there can be no assimilation of the content; but it is also true that one should not cling to the words, but proceed to the things.

The linguistic explanation deals, first, with the words and their combinations and tries to bring home their significance to the mind; and in this task the grammar and dictionary are indispensable helps. It must, furthermore, have regard to the form and nature of the work read—a drama, for instance, necessitates an explanation different from that called for by an epic or an oration—and hence the principles and rules of rhetoric and poetics must be applied. This phase of the linguistic explanation may be termed technico-linguistic. The content-explanation is likewise of two kinds, either dealing with the thoughts and their relations, *i.e.*, logical, or dealing with archeological, historical, or other real matters, which later we shall call antiquarian explanation. The antiquarian and the linguistic explanations result chiefly in an increase of knowledge, while the technico-linguistic and the logical explanations result, besides, in an increase of skill. Every classic read means a gain in words, happy sayings, etc. When dealing with a moral content the explanation should give special attention to ethical considerations and should connect it with more general moral and religious principles.[3]

2. The need of a convenient summary of all these points has given rise to a *schema*, which the teacher is to follow, as far as possible, in explanatory instruction. Medieval schoolmen distinguished three parts of the exposition: 1. "*littera, i.e., congrua*

[1] *Supra*, ch. XXXV, 4.
[2] *De studii ratione* in.; Vol. I, ch. XXII, 1.
[3] *Supra*, ch. XXIV, 3 and ch. XXXV, 4.

ordinatio dictionum, quam etiam constructionem vocamus; 2. *sensus, i.e., facilis quædam et aperta significatio, quam littera prima fronte præfert;* 3. *sententia, i.e., profundior intelligentia.*"[1] The Jesuit Jouvancy's *canon explanationis*, taken from his work *De ratione discendi et docendi*, was used most in the latter Renaissance. It summarizes the essential points of the explanation under six heads: 1. *argumentum, i.e.*, a paraphrase of the content, for which we now substitute the translation; 2. *explanatio proprio sensu, i.e.*, linguistic and logical explanation; 3. *rhetorica, i.e.*, points of style and technique of expression; 4. *eruditio, i.e.*, antiquarian explanation; 5. *Latinitas, i.e.*, the gain for the pupil's vocabulary and stock of phrases, in short, the proper technics of the pupils; 6. *mores, i.e.*, moral reflections. This *schema* of Jouvancy is, like all similar *schemata*, useful if applied properly, but if used in a stereotype and slavishly imitative way, it makes the instruction mechanical.[2]

No explanation, however, will be mechanical as long as the organic character of the classics is stressed. Therefore the single parts should be explained in the light of the whole, and the net result from the single explanations should be the understanding of the whole in all its bearings. Hence the need of following the rules laid down in ch. XLIII, 4: what can be read from the text, should not be brought in from without; and all that the teacher must add to the text, must be connected as closely as possible with it. Furthermore, the explanation should never let the pupil lose the thread of what he is reading; it should, as J. M. Gesner says, "*in rem præsentem deducere.*"[3] For instance, when reading a historian, the pupil must be ready at any time to mention the place (need, therefore, of the map) and the point of the action reached. Similarly, when reading an oration, he must be able, at any time, to indicate the point reached by the orator in his line of argument; and likewise in the drama he may never lose sight of the gradual thickening of the plot. However, when reading classics written in the mother-tongue, the pupil will naturally attend more to the whole, and thus the teacher must give more attention to explaining individual parts. But when reading foreign classics, the pupil finds more difficulty in grasping the meaning, and will consequently attend more to the smaller units; for which reason the teacher must take pains lest his class lose interest in the work as a whole.

[1] Hugh of St. Victor, *Lib. did.*, III, 9.

[2] *Supra*, ch. L, 8; cf. Schwickerath, *Jesuit Education*, St. Louis, 1903, pp. 468 ff.

[3] *Opusc.*, VII, p. 293, in the preface to his edition of Livy.

3. The relationship between the single part and the whole is at the bottom of the distinction—first made by J. M. Gesner in the preface to his edition of Livy—between stationary and cursory reading. This distinction has recently been given up, and everybody seems to accept K. Mager's epigram, "In stationary reading nothing is read, and in cursory reading nothing is learned." There can, of course, be no fixed rule for determining how long it should take to read a classic. But in determining the length of time for an individual case, one will do well to consider these three points: 1. the difficulties, great or small, in grasping the author's meaning; 2. the mental development and general ability of the class; 3. the general character of the classic, which either demands quick reading or necessitates slow progress because of the need of entering into minute details.

All epics should, because of their slow movement, be read quickly, and when reading them the pupils must ever have in mind a larger portion—not necessarily the whole work—which will represent a poetical unit and a complete picture. The rapid movement of the lyric and the drama will naturally keep alive the interest, and for this reason lyrics and dramas may be read more slowly than the epic. Choruses should be read slowly; but dialogues, quickly. Cæsar must, to have the proper movement, be read quickly; but Tacitus requires stationary reading.

Nägelsbach's rule: "Stationary, if necessary; cursory, if possible," may be followed in respect to the pupils. But in respect to the author, the very reverse ought to be the rule: cursory reading, if necessary; stationary, if possible. In other words, if the relationship of the whole and its parts demands quick reading, the reading may be cursory; but if this relationship remains clear with stationary reading, the reading should be slow. Both rules, while opposed to each other, can easily be harmonized. The consideration for the pupils should have more weight in the beginning, but after their minds have been somewhat developed and trained, the author's rights should be regarded more and more. In the beginning the pupils must learn to read, but later they must read to learn. The stationary reading, however, should not be regarded as a makeshift and a temporary expedient. The classics, indeed, have so much to offer that one must allow some time for assimilating their treasures. The antiquities, the manners, customs, and political institutions, which represent so valuable an element, especially of the ancient classics, must be elaborated from the text:[1] "*Wer*

[1] *Supra*, ch. XVII, 7 and ch. XX,2.

den Dichter will verstehn, muss in Dichters Lande gehen" (Whoever would understand the poet, must go into the poet's country); and one might add, must breathe the spirit of the poet's age. Some time should be given to the appreciation of the art of language embodied in the classics; and occasional questions on points of grammar will assist in repeating and supplementing what was previously learned. The reading of the classics also affords a good opportunity for illustrating idiomatic turns of expression, the use of tropes and figures, and the art of building periods. It has been observed that a casual remark on a rule of grammar, suggested by the reading of a classic, often makes a deeper and more lasting impression than what is learned in the grammar classes. K. W. Krüger, whose school editions of the classics should be used more extensively, has even said: "The best is learned incidentally."

We may distinguish two kinds of explanation: one that is indispensable to bring out the meaning of the text, and another that evolves its educative content. The teacher can never dispense with the first kind of explanation. But the second is employed only in stationary reading, because in cursory reading the educative content can merely be touched upon. The first kind of explanation precedes the translation which is the expression of the understanding obtained; but the second follows the translation and connects with its results. Obviously, the two kinds of explanation need not be kept separate; but with rich material it is better to do so, as the detailed explanation, if injected into the translation, retards its flow, and hence it had best be held over till last, *i.e.*, till after a longer passage has been translated.

4. The translation is, then, the pivot of the explanation, and holds in our schools a much more important place than in the old education, where the custom obtained of translating only the Greek classics into Latin, while Latin paraphrases were considered sufficient for the Latin classics. The translation into the mother-tongue has the advantage of making the native language consciousness of the pupil the point of relationship and of transforming and perfecting it, while the paraphrasing of the old education only added a second language consciousness.[1] The demands made upon the pupil's translation should correspond to his ability, and it would be vain to expect the beginner to observe Horace's rule,

[1] *Supra*, ch. XVII, 5.

"Nor try, by emulation stirred,
To reproduce your Homer word for word."[1]

Still the ideal should ever be what Newman describes as "the difficult task of recasting the mind of the original author in the mold of a translation." The teacher should train his pupils to follow the example of Cicero, who did not count the words of the original, but rather weighed their meaning.[2] We have elsewhere said[3] that the translation should take into account the whole and its parts and so apply the organic principle.

In respect to the translation, the self-activity of the pupil will be evoked by letting him prepare for the text to be read in class. The pupil's preparation introduces a heuristic element into the translation, and also serves as a medium for apperceiving what is supplied by the teacher. But the home-preparation should not be considered of chief importance. On the one hand, the pupils may easily shirk it by having recourse to a printed translation, a "pony"; and, on the other hand, the review of the translation that is given by the teacher, is of great educational value. In this respect, the teacher should not overestimate the heuristic element and should not be satisfied with merely directing and supervising the pupil's work, but should remember that the interpretation of the classics is his duty and privilege. He should, with the whole class co-operating, correct the translation made by one pupil, and, if necessary, himself make a translation. The teacher should, perhaps at the end of the class period, tell his pupils how to overcome certain difficulties in the new preparation. The home-preparation is not the only preparation. The teacher may discover some points of contact between the text and the pupil's circle of thought, or be able to adduce other apperception-masses, or he may note certain difficulties that had best be removed beforehand, as they might otherwise unduly prolong the explanation.

5. If we summarize all that we have noted with regard to the reading and explaining of authors, we shall obtain the fol-

[1] *Ars Poetica*, 133: "*Nec verbum pro verbo curabis reddere fidus.*"

[2] Cicero, *De. opt. gen. or.*, ch. XIV,:"*Non verbum pro verbo necesse habui reddere, sed genus omne verborum vimque servavi, non enim ea me adnumerare lectori putavi oportere, sed tanquam appendere.*"

[3] *Supra*, ch. XLIII, 5. Cf. Newman, *Idea of a University*, London, 1902, pp. 286 ff. "The classic treatise on translating poetry, alike valuable in matter and attractive in style, is Matthew Arnold's course of lectures delivered before the University of Oxford, *On Translating Homer* (Genung).

lowing *schema*, which, however, should not, any more than the formal steps, be mechanically applied to each and every text:

I. Preparation: 1. the teacher gives extensive hints concerning the preparation; 2. the pupils' home-preparation; 3. the teacher's preliminary remarks on the text.

II. Translation: 1. translation of the text by a pupil; 2. his fellow-pupils and the teacher correct his translation: 3. logical and linguistic explanation of all that is deemed essential to the understanding of the text; 4. a correct and fluent translation is given by the teacher and the pupils, or by the pupils alone.

III. Handling of the text: 1. explanation of the content; 2. stressing of the moral elements; 3. technique of rhetoric, poetry, and style; 4. Latinity, *i.e.*, vocabulary, phrases, grammatical rules.

All the explanations of individual passages must have as a net result the understanding of the whole work (*supra*, p. 338). But the whole work as such may also be made the subject of a special explanation, and in contradistinction to the explanations we have been dealing with, it may be called the higher explanation. The teacher should attempt this kind of explanation with his pupils, if he can expect them to obtain a view of the whole and an understanding of all its parts and relationships. A twofold aim should govern the work of the higher explanation: the pupils should, first, be led to understand the whole work in the light of its motif, its basic principle, and see, if possible, how it developed from its germinal idea; and, secondly, they should learn to know the organic relations between this one work and other classics. These organic relations are of three kinds. The work is, in the first place, a creation of the author's mind, and this involves certain relations between it and the other writings that are born of the same mind, and to trace these relations will materially assist in understanding any of the author's productions. Secondly, the work is cast in a certain artistic form, and hence has some relations with all writings of the same class. Thirdly, it is written during a certain period of a nation's literary life, and consequently reflects more or less of the spirit of the respective age and nation. These factors, then, suggest four viewpoints for the higher explanation: the genetic, which traces the development of a classic from its germinal idea; the biographico-genetic; the æsthetical; and lastly the viewpoint of literary history. The teacher can, as a rule, apply this method only in explaining works written in the mother-tongue. He will find it necessary to give a closer attention to details than is

called for in general reading. He will have to make many analyses, institute comparisons of all sorts, and diagram passages and entire works.

The time to be given to this method of studying the work as a whole should be determined by the consideration whether it really deepens the understanding of the text. It is a mistake to regard the higher explanation as valuable for its own sake, as a formal discipline; and to consider it as such leads to overburdening the pupils and giving them a distaste for literature. What Washington Irving says of the endless analyses and commentaries on Shakespeare, is true of some other classics as well: "His whole form is overrun by a profusion of commentators, who, like clambering vines and creepers, almost bury the noble plant that upholds them."[1] *Tollatur abusus, maneat usus.* The classics can not be read with the rapidity of a newspaper; the pupils can not be expected to grasp of themselves the treasures of thought contained in the world's greatest books. Especially in the lower classes will the poetical turns of expression be above the pupil's comprehension. The rhythm distracts them; and being taken up with individual expressions, they know nothing of the work as a whole. The logical method of studying the classics has not yet been proved useless, and it rests with the teacher to avoid its pedantic abuse.

CHAPTER LIV

Examples of Explanatory Instruction

1. For illustrating the method to be followed in reading and explaining the classics of one's mother-tongue, we have selected one of the most popular and instructive poems of modern German literature, Schiller's *Lay of the Bell.* Though this subject has been treated quite frequently, it has, nevertheless, not been exhausted. The genetic element is represented in so far as we can, to some extent, trace the genesis of the poem. Schiller conceived the idea of writing a *Lay of the Bell Founder* in 1788, in Rudolstadt, where he frequently visited a bell foundry located near the town.[2] But several years passed before the plan was again taken up, in 1797. In a letter to Goethe, dated July 7,

[1] *The Mutability of Literature,* in *The Sketch Book.*

[2] A bronze tablet placed on the foundry, which is still standing, commemorates the fact that Schiller here conceived the idea of his *Lay of the Bell.*

1797, Schiller writes: "I have now taken up my *Lay of the Bell Founder*, and am since yesterday studying with much profit Krünitz's encyclopedia. This poem is dear to my heart, but weeks will pass before it is finished, as I need so many different moods for it and must plough through a great mass of material." But at the end of August he writes to Goethe, his indifferent health had robbed him of the proper moods as well as of the leisure for his *Bell*, which, as he says, "is far from being cast." In a letter of September 22nd he consoles himself over the unavoidable interruption: "By carrying the subject about with me for another year and by keeping it warm, the poem, which is indeed no small task, will be properly matured." Goethe replied that the *Bell* would surely sound the sweeter the longer the bronze continued to purge off the dross. The next year, however, was taken up with *Wallenstein*, and it was only in the autumn of 1799, when the *Musenalmanach* was clamoring for copy that Schiller finished the poem. September 4th he went to Rudolstadt, where he probably revisited the bell foundry; on the 15th he returned to Jena, where Goethe joined him. Schiller finished the work during Goethe's stay, and on September 30th he sent it to the printer at Weimar.

The teacher may use these data in his introduction to the *Lay of the Bell*, and he should connect them, as far as is necessary, with other related facts of the poet's life. When reading the poem, the teacher must explain some expressions and also some technical matters (verbal and content-explanation). The poet took pains with the terms relating to the casting of the bell, and the teacher should make sure that the pupils understand their meaning. Götzinger's *Deutsche Dichter*, Vol. II, contains good material for these explanations. It is obvious that the allusions to contemporary events, for instance, to the French Revolution, should be explained. The pregnant and striking use of words should also be noted. Special attention should finally be given to the rhythm, the change of metre, and the frequent instances of onomatopœia.

The motif of the *Lay of the Bell* can not be grasped and the composition of the poem can not be understood unless the classic is divided into different parts. But to make the proper divisions is not difficult, as the poem itself shows several distinct parts. The stanzas that contain the master's directions and remarks are written in the trochaic measure and have the following rime scheme: ab ab cc dd. The other stanzas with varying structure depict such scenes as are ushered in, or are con-

nected in some way, with the ringing of bells; baptism, wedding, burning of the home, funeral, curfew, revolution. There are transitions, which have no direct relation to the bell, and which connect the various scenes with one another. The transition from the baptism to the wedding deals with youth and youthful love; and in the transition from the wedding to the burning of the home, the happiness of the home circle is described. The next transition, from the burning of the home to the funeral, describes how the father consoles himself with the fact that none of his family perished in the fire. The description of social order forms a happy transition from the picture of the evening scene to the horrors of the revolution. Hence the composition may be represented by the following scheme:

The master's discourses concerning the casting of the bell.	Scenes associated with the bell.	Transitions.
Call to work.	Call to reflection.	
Directions.	Purpose of the bell.	
Purifying the bell metal.	Baptism.	Youthful love.
Testing the bell metal.	Wedding.	Prosperity and Pride.
Casting the bell.	Burning of the home.	Father's consolation.
The metal fills the mold.	Funeral.	
Curfew.	Evening scene, harvest home.	Social order.
Breaking the mold.	Revolution.	
The finished bell appears	Blessing of the bell.	
Hoisting up the bell.		

Schiller shows great care and is at places even a little artificial in connecting the master's discourses with the scenes from life. The bell metal should be pure, so that the bell's voice may be "perfect, and pure, and deep,"[1] when welcoming the child to the baptismal font. The fusion must be tested to see whether the "hard and the ductile united combine," just as the hearts must be tried before "the stern in sweet marriage is blent with the weak." The bell metal is placed, like the remains of the departed, in "the dark womb of sacred earth." More natural are the transitions from the casting of the bell to the burning of the home, from the curfew to the scenes of peace, and from the breaking of the mold to the picture of revolution. The movement in the master's discourses is parallel to the progress made in casting the bell. The movement in the meditative sections is governed, in part, by the different stages in the cast-

[1] We quote throughout from Bulwer-Lytton's translation of the *Lay of the Bell.*

ing of the bell, with which they are associated. But there is an internal connection besides: in its pictures of baptism, wedding, poverty, and death, the *Lay of the Bell* embraces the chief events of private life; and in its pictures of peace and revolt it depicts the conditions of public life. Thus we see the motif of the poem: to present human life in such scenes as are associated with the ringing of bells, and as can be associated also with the different stages in the casting of a bell.

2. The pupils will easily recognize the poet's individuality in the *Lay of the Bell* even if they have only a limited acquaintance with Schiller's popular works. The poem reveals Schiller as the representative of a reflective poetry that delights in treating momentous questions and problems. But it shows him, too, as a dramatist, who converts the material that at first blush seems to admit only of reflection and description, into a short drama. The poet proceeds from and through the sensuous to the sublime, but all his sensuous materials are actual and real. His poem abounds in action, movement, and development; and we must look before reflecting. In this respect, the *Lay of the Bell* is similar to Schiller's *Walk*, and as this poem treats, besides, a somewhat analogous subject, the two poems should be compared.

While the *Lay of the Bell* is of a didactic character, it contains epic, lyric, and dramatic elements. In respect to its external form, it is a cantata. The reflective sections are elegiac in tone, but at places we meet passages that strike the note of the ode. The narrative sections are written in ballad style. That the poem is correlated with all arts, is evidenced by the fact that it has been edited for stage use, has been set to music by Romberg, and has been illustrated by Retzsch, Kaulbach, and others.

It is instructive to consider the school of poetry to which the *Lay of the Bell* belongs. It is a product of the classical school, and belongs, therefore, to Renaissance poetry, the influence of ancient poetry being seen in the whole as well as in single expressions. The following expressions are either borrowed from, or modeled after, mythology: "free nature's free-born child," "heaven-descended glow," "holy order," "daughter of the skies," "dark womb of sacred earth," "dark prince of shadows," "the wreathed year." The following are reminiscent of Homer's style: "the hum of the spindle," "in the blank voids that cheerful casements were, comes to and fro, the melancholy

air, and sits despair," "the lusty-fronted steer;" and to collate these expressions with Homeric phrases would be an interesting task. That the poet's fancy caught the spirit of ancient poetry, can be seen from the sensuous definiteness and animation that are characteristic of the persons introduced: youths and maidens, blithe masters, thrifty housewife, weeping poor, happy mowers, banded murderers. There is, then, reason enough for comparing the *Lay of the Bell* with the picture of life given by Homer in his description of Achilles' shield, where, as in Schiller, the wedding and the harvest home, the dance and the war, are portrayed in the form, not of dry description, but of a story.

However, with Schiller the ancient material is neither an external element nor a servile imitation, but is perfectly blended with the national elements. The poem is, indeed, one of the most nearly perfect products of German classicism. In Schiller's *Artists*, *Walk*, *The Eleusinian Feast*, the various elements had not yet blended. These poems have a cosmopolitan character, quite in keeping with the prevailing tendency of the 18th century. In the *Lay of the Bell*, however, the ancient elements harmonize with the German character of the scenes, and are not opposed to the Christian spirit. The description of the housewife recalls Paul Gerhard's *Praise of Woman*, which latter is an imitation of the last chapter of the Book of Proverbs: "She delights in wool and flax and is familiar with all that belongs thereto; her fingers are busy; they work long and rarely rest." The description of the harvest recalls poems by Hölty, Salis, and others. There are some Christian strains: "the blessing withal must descend from on high," "speed the pious prayer," the bright stars that, "while they move, their Maker praise." By making such collections of phrases and expressions the pupils will realize that the attentive perusal, the noting of single details, and the minute study of the media of presentation assist them in understanding the whole, and that a philological study of minutiæ has its value for national literature also.

3. The national element in Schiller's classical poem has undoubtedly made it so deservedly popular. Yet Schiller's poetry on the subject of bells is essentially different from the folk poetry on the same subject; and a comparison of the two kinds of poetry will show the *Lay of the Bell* from a new point of view. With Schiller the bell attends upon "the changes of the human state," yet "no pulse—no heart—no feeling hers." But folk poetry endows the bell with heart and feeling: the bell rings of

itself to give warning of some impending danger or to announce a saint's death; it leaves the belfry to toll the knell of a neglected corpse in the forest, or to call a tardy child to church, or to journey on Maundy Thursday and Good Friday to Rome for a blessing; if the master has adulterated the bell metal, the bell refuses stubbornly to emit any sound, until the master himself attempts to ring it, when it drops and crushes him.

Schiller, further, calls the bell "the neighbor of thunder," but he fails to make any other reference to "*fulgura frango*," that part of his motto which ascribes to bells the power of dispelling storms. Folk poetry, however, considers the bell a protector from storms and other visitations. Its voice must rise above that of Donar, the god of thunder. When bells were heard for the first time, the dwarfs, pygmies, and goblins departed, because they could not bear the barking of the "great dog." The fact that the bell metal is a mixture of all seven metals, makes the spirits of the metals subject to the bell.

Several poets of the Romantic School drew upon the legendary lore of bells for material, and their poetry should be compared in this respect both with Schiller's classical poem as well as with folk poetry. Uhland sings of a mysterious ringing of bells:

"Full oft I hear in woods afar
Deep sounds on high of chime and bell,
And no man knoweth whence they are,
And e'en the legends scarce can tell.

'Tis from the church, long lost, they say,
The passing winds take up the sound;—
Time was when pilgrims thronged the way,
Now it can nevermore be found."

Wilhelm Müller writes of bells whose ringing is heard from the depth of the sea:

"From the deep of seas unsounded,
Morning bells are ringing deep and full,
Bearing tidings, strange and wondrous tidings
Of the ancient city beautiful."

Eichendorff sings of the solitary dreamer who is kept in the forest by the nixes' charm until

"Over wood and hill
Pealed forth the bells of morning
Through the welkin still."

J. Sturm sings of the fleeing spirits; and W. Müller's *Casting of the Bell in Breslau* is also based on legendary lore. The dif-

ferences between these poems and Schiller's *Lay of the Bell* illustrate the contrast between classical and romantic poetry. With Schiller, figures attract one's gaze; but with the Romanticists, moods come upon the reader. In the former we find teachings; in the latter, mysteries. With Schiller the sounds of the bell die away; but with the Romanticists the echoes of their ringing linger long: "'Tis half joy, half sadness, like the memory of the olden days."

When a poet, whether of the classical or the popular school, takes up the subject of bells, he finds not a raw material, but a living and spiritual thing, which the arts, religious worship, and poetic imagination and thought have already transformed and spiritualized. Christian piety, with its characteristic tendency toward the great and magnificent, enlarged the chimes (which were known in pre-Christian religions) to the bell, just as it developed the syrinx into the organ. The Church conceives the bell as representing the trumpet of the Old Testament and as foreshadowing the trumpet of the Last Judgment, the "*tuba mirum spargens sonum per sepulchra regionum.*" Its function is to enkindle piety, and, as it were, to awaken the other instruments of divine worship and to invite the angels to assist in adoration.[1] The bell must, furthermore, usher in the great feasts of the year: Christmas, by the matin call; Easter, by the sombre silence and the rejoicing fulness of the ringing on the morning of the Resurrection. It must also announce the canonical hours of the day,[2] and, lastly, ban the impure and all ills that spring therefrom. All these functions are summarized in the Leonine verses that were commonly inscribed on bells in the Middle Ages:

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[1] One prayer of the *Benedictio Campanæ*, in the *Pontificale Romanum*, contains the following: "*Cum clangorum illius vasculi* (*sc. campanæ*) *audierint filii Christianorum, crescat in eis devotionis augmentum, ut festinantes ad piæ matris Ecclesiæ gremium, cantent Tibi in Ecclesia Sanctorum canticum novum deferentes in sono præconium tubæ, modulationem psalterii, suavitatem organi, exsultationem tympani, jucunditatem cymbali, quatenus in tempore sancto gloriæ Tuæ suis obsequiis et precibus invitare valeant multitudinem exercitus Angelorum.*" The psalms of the service of blessing the bell are such as celebrate the voice of the Lord, as Ps. 28: "*Vox Domini super aquas, Deus majestatis intonuit: Dominus super aquas multas,*" and Ps. 76: "*Multitudo sonitus aquarum: vocem dederunt nubes,*" etc. Cf. *Bells*, in the *Ave Maria*, Notre Dame, Ind., Feb. 7, 1914, pp. 175 ff.

[2] Liturgically, the day is divided into hours founded on the ancient Roman division of the day: Matins, Lauds, Prime, Terce, Sext, Nones, Vespers, and Compline. *Catholic Encyclopedia*, s. v. *Breviary*.

"Laudo Deum verum, plebem voco, congrego clerum,
Defunctos ploro, nimbum fugo, festaque honoro."

Schiller chose as motto an inscription taken from a bell in Schaffhausen: "*Vivos voco, mortuos plango, fulgura frango.*" The following inscription on a bell in Brixen reads like a translation of it:

"Ich weck den Geist zur Schuldigkeit,
Ich sing den Leib zur Ruh,
Ich tön durch Luft und Wolkenstreit,
All Übel fernen thu."

All this means more than poetry—adoration is more than poetry—yet it is poetry withal, and the ecclesiastical poetry of bells is thus the fourth kind of poetry to be considered in our comparison. But in respect to historical development, this ecclesiastical poetry is the first and most primitive interpretation of the bell as an instrument of devotion. After the ecclesiastical poetry comes the folk poetry of the bell, as being most closely allied with the first; and the folk poetry in turn is followed by the romantic. In regard to pronounced relationship with the ecclesiastical poetry, Schiller's classical poetry comes last. But in one respect it approaches ecclesiastical poetry closer than the other kinds of poetry, namely in so far as it brings the bell into relationship with the day, the year, one's whole life; and in this way classical poetry approaches the ecclesiastical poetry in its universal tendency, in the tendency toward the great, *i.e.*, in all that brought Schiller in other regards also close to the Church.

Thus the *Lay of the Bell* affords an opportunity for illustrating the differences between the various schools of poetry. These differences can ultimately be traced to differences in the world-view. Several of these topics, which grow out of one another, are subjects for compositions. The teacher should select now this, then another, subject; or he may also call for a whole series of compositions on the poem. Such exercises in composition work will not accustom the pupils, as is the case with so-called moral themes, to idle talk and verbosity, but will force them to think and search after solid material.

4. We shall select Ovid's tale of Arion for illustrating the method to be employed in explaining foreign classics. So much of the text should be read as will enable the pupils to note, not only the general character of the work of which the tale is a part, but also the circumstances that suggested to the poet the subject of Arion. The tale is a part of the *Fasti*, and the circum-

stance that the constellations of the Lyre and the Dolphin disappear in the beginning of February, suggested the story of Arion's wonderful rescue. To illustrate all the elements—except the panegyrical, the omission of which is no loss—that are woven into the weft of Ovid's poetical calendar, we shall add to the tale itself a few lines that deal with sacred rites and a few others that describe the weather in February. The following lines, taken from the second book of the *Fasti*, will suffice for this purpose:

19. Februa Romani dixere piamina patres.

31. Mensis ab his dictus, secta quia pele Luperci
omne solum lustrant, idque piamen habent.

55, 67. Principio mensis—lucus celebratur Helerni,
qua petit æquoreas advena Tibris aquas.

69. Ad penetrale Numæ Capitolinumque Tonantem
inque Jovis summa cæditur arce bidens.

71. Sæpe graves pluvias adopertus nubibus Auster
concitat, aut posita sub nive terra latet.

73. Proximus Hesperias Titan abiturus in undas
gemmea pupureis cum iuga demet equis.

75. Illa nocte aliquis, tollens ad sidera vultum,
dicet "Ubi est hodie, quæ Lyra fulsit heri?"

79. Quem modo cælatum stellis Delphina videbas,
is fugiet visus nocte sequente tuos.

81. Seu fuit occultis felix in amoribus index,
Lesbida cum domino seu tulit ille Lyram.

83. Quod mare non novit, quæ nescit Ariona tellus, etc.
to verse 118: stellas jussit habere novem.

The lines to 82 deal with the general theme of the ancient Roman February, and may be treated as introductory. In order to correlate this subject with the mental horizon of the pupils, the teacher should proceed from our calendar. The following questions should be treated before beginning the reading of the text: What are the characteristic features of February? What holydays and holidays occur during this month? What is the usual state of the weather during February? What astronomical phenomena can be observed during this month? A planisphere should be used to obtain the material for answering the last two questions. Set the planisphere for the first evening hours of February, and it will be seen that several constellations

among them the Lyre and the Dolphin, are about to set in the west and that they will soon, with the days getting longer, be invisible. Brief reference should be made to the risings and settings of other constellations previously met with, either in the classics or otherwise. It is sufficient, however, to ascertain the facts, as the explanation of the facts belongs to astronomy. But this latter branch of instruction may well be based on the knowledge of such facts, just as mathematical geography may also be grounded on the reports of the appearance of the heavens in other places. The following passages from the poets may be referred to briefly: The setting of Bootes and of Arcturus in the last night hours of summer (ὀψὲ δύων βοώτης, *Od.*, *V*, 272) and in the evening hours in late autumn ("*Arcturi cadentis impetus*," Hor., *Od.*, III, 1, 17), the rising of Sirius in the mornings of the canicular days (ὅς ῥά τ' ὀπώρης εἶσιν, *Iliad*, XXII, 27, "*hora Caniculæ*," Hor., *Od.*, III, 13, 9 and I, 17, 17) and the setting of Orion in the mornings of autumn ("*devexus Orion*," Hor., *Od.*, I, 28, 21). In respect to the present passage of Ovid, it will be sufficient to study the planisphere, but whatever is seen on it, should, if possible, be verified by observing the heavens.

The mythological allusion of the last line should be explained in the beginning also. The Nereid Amphitrite had been wooed by Neptune, and, to escape his attentions, had hid with Atlas in the depths of the sea. But being discovered and reported by the Dolphin, she consented to be the wife of the suitor she had at first rejected; and the Dolphin was, in acknowledgment for his services, raised among the stars.

The actors in the story and all local allusions should be explained. The "*Luperci*" (those who kept off the wolves) were the priests of Faunus, and were wont, while clad in goatskins only, to make at the Lupercalia, February 15th, a fast circuit of the Palatine Hill, striking with goatskin thongs ("*secta pelle*") all women encountered, a rite believed to ensure fertility and easy delivery. Some explanation should also be given of the sacrifice in the grove, where the Tiber, the stranger ("*advena*") of Etruria, leaves the city. The "*Regia*" is Numa's palace, located on the Palatine Hill beside the temple of Vesta. The temple that Augustus built in honor of Jupiter Tonans was located on the southwest summit of the Capitoline Hill, near the temple of Jupiter Capitolinus, the latter being here called "*summa arx Jovis*," while "*arx*" generally signifies the citadel on the northeastern summit of the same hill. Titan should be

explained mythologically, and the description of his steeds should be compared with the description of Phæthon's steeds, in the *Metamorphoses*. The expressions "*gemmea juga*," "*purpurei equi*," and "*cælatus stellis*" are borrowed from the terminology of the arts: ornaments set with precious stones, cloth of purple, and carved figures; but "*purpureus*," as here used by Ovid, signifies only the deep and rich color of the steeds. It should not be overlooked, that the steeds are, like oxen, bearing on their backs the yoke that is fastened to the shaft.

The educative content, which should be examined after the explanation and the translation, consists essentially of liturgical matter. The liturgical concepts can be assembled in word-groups, and these groups have the advantage of facilitating the memorizing of vocables and of antiquarian details. In the present case the word-group is the following: "*Februa*, *piamen* (*pius*, *piare*), *lustrare* (*lustrum* and *luo*), *penetralis* (*penetralia*, *i.e.*, *deorum Penatium sacraria*), *bidens*" ("*ambidens*," an animal with two rows of teeth). Faunus, the god worshipped by the Luperci, can be connected with Pan, and the atoning sacrifice of the goat may be associated with the scapegoat of the Israelites. The term scapegoat has, moreover, become a proverbial expression.

5. The tale of Arion may be treated in the following manner. We may proceed along genetic lines inasmuch as Herodotus (I, 23 and 24) wrote on the same subject, and Ovid may have drawn much of his material from this older version. At all events, it is instructive to compare the two versions of which the one by Herodotus should, of course, be examined first, and the facts known of Arion's life may be discussed in connection with it. Herodotus introduces Arion as the friend of Periander of Corinth and as the inventor of the dithyramb. He also tells us that in thanksgiving for his wonderful rescue Arion placed in the Poseidon Temple in Tainoron a votive offering, which represented a man riding on a dolphin's back.

If the meter offers no difficulties, the reading of the text may be rapid. A few brief notes may be helpful for the translation. The owl is the "*Palladis ales*" (line 89). Cynthia (l. 91) is another name for Diana, so named from Mount Kynthos of Delos. Ausonis (l. 94) refers to Italy. "*Dubiam*," in "*dubiam* (unsafe) *rege*, *navita*, *puppem*" (l. 101) is an epitheton ornans, connoting, however, the pilot's neglect. "*Arma*" (l. 102) signifies, when applied to navigation, the tackling and equipment of

a ship, whether for use, steerage, or defence. "*Ridentque moram*" (l. 105): the sailors are ridiculing either the cause of the delay or the procrastinating excuse. "*Redditit icta suos pollice chorda sonos*" (l. 108): the string gave forth its own proper tones. "*Canentia pectora*" (l. 109): the swan's white breast (*cănĕre* and *cānēre*). "*Oneri novo*" (l. 114): the strange and novel burden, "*novus*" being here used in the same sense as in the introductory lines of the *Metamorphoses*. "*Pia facta*" (l. 116): holy deeds in contrast to the sailors' "*impia facta*." "*Stellas novem*" (l. 118): the nine stars corresponding to the number of the Muses.

Looking over the whole, we perceive that Ovid departed in several points from the earlier version, but the reasons for this are not difficult to find. Arion, as represented by Herodotus, is mistrustful to such a degree as to refuse to sail on any ship but one manned by Corinthian sailors, the subjects of Periander, his royal patron. Ovid, however, makes no mention of this distrust, which was certainly not a noble trait; but describes him as only possibly ("*forsitan*" V, 97) afraid of the dangers of the deep. In Herodotus' version, the sailors delight in listening to the song of the famous singer; but Ovid's sailors have no taste for such matters, and make sport of Arion's request to play and sing. Herodotus relates that Periander was skeptical of Arion's rescue, that he kept him hid in order to surprise the sailors by producing him before them; but Ovid concludes his account with the marvelous journey. It is plainly Ovid's purpose to demonstrate the power of song and music, and thus he attributes to Arion those wonderful results, which are in other classics related of Orpheus and Amphion (lines 84–90).

The ancients—and this leads over to the discussion of the moral elements of the tale—ascribed to poetry and music a power over nature akin to that which they exert over man. With the Romans the one word "*carmen*" signified song, incantation, and hymn of consecration. Ancient legends relate that singers and musicians stopped the warring of brutes; and at the bottom of all such tales is the belief that this warfare was not the primitive state and that it would again have to give way to universal peace. Vergil tells us, in his fourth eclogue, that when the Golden Age returns to the earth, the lion will no longer be feared of the herds, and that the serpent will die; and there is an unmistakable similarity between his words and the prophecy of Isaias (ch. XI) concerning the kingdom of the Messias: "The wolf shall dwell with the lamb; and the leopard shall lie

down with the kid; the calf and the lion and the sheep shall abide together, and a little child shall lead them."

After this a comparison of modern versions (by A. W. v. Schlegel and Tieck) with the ancient model will be in order, and such a comparison should prove a suitable subject for composition work. The teacher may also examine into the deeper significance of the tale: Arion, the inventor of the dithyramb (the choric hymn, sung in honor of Dionysos and usually by revellers to flute accompaniment), was preserved from prematurely descending to Hades, just as Orpheus, the priest of the Chthonian gods, was allowed to return from Hades to earth. The dolphin is both in pagan and Christian symbolism the kind guide of the dead; on ancient tombs it is represented as carrying Eros on its back; and on articles of ornament a butterfly, representing the soul returning home, is frequently shown hovering above a dolphin.

There is some similarity between the tale of Arion and the Homeric hymn, "Dionysos or the Pirates." The young Dionysos was kidnapped by pirates, and the pilot of their ship is the only one who recognizes the god, the rest of the crew being blind with greed and avarice. The god lets grapevines and ivy grow on the ship and frightens the pirates by producing a lion and a bear, whereupon they throw themselves into the sea and are changed into dolphins, the pilot alone being saved and blessed by Dionysos. This version shows the point of contact with the mysteries: it is only the initiated, *i.e.*, those who have through the mysteries become acquainted with the soul's guide, the λύσιος θεός, who journey safely on the ship of life to the haven, while the uninitiated succumb to the forces of nature, the lion symbolizing the heat, and the northern constellation of the Great Bear or Dipper symbolizing the cold.

6. The antiquarian explanation must deal, first, with the poet's rich dress (which was twice dyed in purple), with his lute, and the dithyramb, which he sings to the accompaniment of the lute. The following matters pertain to mythology: the owl is sacred to Minerva; the swan, to Apollo; and the dolphin is sacred to Poseidon and Apollo. The dolphin should be treated in its aspect to natural history also. The dolphin that Ovid speaks of seems to be the Delphinus Delphis, the common dolphin usually called porpoise by sailors, which usually becomes about seven feet long, and has on the middle of its back a fin a foot and a half in height. Dolphins feed on fish and

swim in large schools, and when at play they often leap entirely out of the water. When not disturbed, they are fond of following and playing about vessels; and perhaps they do enjoy music, as the ancients claim. But there is little probability to the riding on a dolphin's back, though there are several legendary accounts of this, but all these date from ancient times. The hero of one of these accounts is Taras, the founder of Tarentum, the port where Arion embarked; and this circumstance may indicate some connection between the two tales. The struggle between the crows and owl (line 89) should also be touched upon; and it may be illustrated by the custom that obtains even to-day among hunters of building huts in which an owl is kept, for the purpose of alluring the crows to within range of the rifle.

The poetico-rhetorical explanation should note the double apostrophe in the poet's addresses to Arion and the pilot (lines 97-98 and 101-102), the parallelism in line 83: "*quod mare non novit, quæ nescit Ariona tellus?*" This parallelism may be illustrated by Scriptural quotations, for instance, "Whatsoever the Lord pleased He hath done, in heaven, in earth, in the sea, and in all the deeps" (Ps. 134, 6). The teacher should also draw attention to the repetition: "*sæpe sequens—sæpe avidum—sæpe canes*" (lines 85-87) and to the like endings (ὁμοιοτέλευτον) in line 105: "*dant veniam videntque moram, capit ille coronam.*" Note should be taken of the poetical use of the adjective for the genitive: "*fraterni modi*" (l. 92), "*nomen Arionium*" (l. 94), "*lyrici soni*" and "*Ausonis ora*" (l. 94); of the synecdoche in "*puppis*" used for ship (l. 95), as well as in "*penna*" used for arrow (l. 110); and of the epitheta ornantia: "*loquax cornix*" (l. 89), "*puppis dubia*" (l. 101), "*cærula puppis*" (l. 112), and "*tergum recursum*" (l. 113).

Of individual words, the adjective "*vocalis*," used in line 91 in the sense of poet, is noteworthy, because in grammar the term has various meanings. In order to show the connection between the different usages, one may examine such terms as "*aves cantu vocales*" and "*verba vocalia.*" It may be added that "*vocales*" in low Latin means musicians. The Greek word-formation in "*Ausonis*" should not be overlooked. The significance of the term swansong is clear in the light of lines 109 110. The synonyms "*modi*" (l. 92) and "*numeri*" (l. 109) should be compared with each other. The poetical usage of "*referre*" in the sense of recite is akin to the prose meaning of "*relata refero.*"

Points of etymology are recalled by "*puppis*," which is one of the words allowing *im* in the accusative, and by "*delphina*," which has the form of the Greek accusative. Points of syntax will be suggested by the poetical construction of "*forsitan*" with the indicative (l. 97), where in prose the subjunctive would be required. The accusative of limitation is used after the Greek manner (*accusativus Græcus*) in "*pectora trajectus*" (l. 110). The pupils should note the apposition "*cantat pretium vehendi*" (l. 115). From the viewpoint of style, the following phrases are interesting: "*Quid tibi cum gladio?*" (l. 101), "*mortem non deprecor*" (l. 103), "*constricto ense consistere*" (l. 99), "*navem regere*" (l. 101), "*in medias undas desilire*" (l. 111), "*fide majus*" (l. 113).

CHAPTER LV.

Developmental Instruction

1. By developmental instruction we mean the method employed by the teacher when developing before and with his pupils a content of teaching. We, therefore, give an objective meaning to the term, while others attach to it the subjective signification of the development of the mental faculties. In this second sense both presentative and explanatory instruction are developmental. But the development of the mental faculties will be furthered in a special way by the instruction that develops an object, and hence our term developmental instruction, though implying primarily the objective development, connotes the subjective element also.

Developmental instruction meets the two requirements of imparting knowledge and of exerting thereby an educational influence, and it is particularly the stimulating of the understanding and the exercise it affords in thinking that distinguish this form of instruction. But it must meet a third requirement, that of correlating all the results with one harmonious whole; and this is the more urgent, as the abstract materials, which are the specific matter for the application of developmental instruction, might create the impression of their being entirely independent and complete in themselves—witness the isolation of mathematics—whereas it is just these materials that must

be connected with the concrete and correlated with the mental horizon. The course of the development itself should, indeed, be spontaneous and without any artificial deflections. Still a skilful preparation, if it is heuristic and if it visualizes and reviews what went before, may prevent the isolation of the subject-matter; and the varied application at the end should aim at the same object.

To find the points of contact and the methods of application, is the function of the *inventio*. But as the subject-matter is homogeneous, the *inventio* is less difficult in developmental instruction than in presentative instruction. Greater care must be given to the *dispositio*, for the purpose of insuring order and perspicuity. The pupil must be able to follow the thread of the development, and to pursue it to the centre of the argumentation, and to establish the proper relationship between the starting-point and the end of the development, between the question and its answer, and the problem and its solution. Consequently, we must eliminate all secondary and subsidiary matters and choose the shortest path. In respect to the *elocutio*, we must distinguish the development proper from the final statement of it: the former demands at times eloquence and variety of expression; but the latter had best imitate the brevity of the formula and system. The *actio*, *i.e.*, the pupil's co-operation, is less free than in presentative instruction. In developmental instruction the best co-operation of the pupils consists in following, without a break, the teacher's course of development; and of this co-operation the teacher can assure himself by interspersing such brief questions as can be answered in a few words.

In the development the given is either traced back to the general or is derived thence. In the first case, the development is analytical; and in the second, synthetical (ch. XLI, 2). But in instruction, analysis and synthesis are not confined to the sphere of development, for they occur whenever anything abstract is illustrated by something concrete, or when anything concrete is treated speculatively (ch. XLIX, 1). But there is question of a development only when these operations are applied to a whole, which involves the extension of the mental operations also to a larger field. The development can be applied to empirical as well as to rational materials. In the first case, its object is the connected speculative treatment; and in the second, the purpose is the acquiring of new knowledge from what is already in the mind.

2. With regard to the development of empirical materials, one must see to it that these be sufficiently prepared for the application of the developmental method. If the analytical process is to be applied, the concrete must offer a solid enough basis for supporting the abstract; the facts must be plain enough, before one can proceed from them to the causes. This holds, in the first place, for the instruction in the natural sciences. The teacher should not attempt to develop a genus before the pupils have grown familiar with a series of species, as the basis for the process of abstraction would otherwise be too narrow. In physics observation should come first, and its results should be accepted without attempting an explanation, and the seeking for the causes should come last. We had an analogous development, in the field of astronomy, when dealing, in ch. XLII, 7, with climatic differences. The wording of a definition also necessitates an analytical process, and in finding a definition the teacher may generally employ the heuristic form of teaching. All such analyses must lead the pupils to appreciate the value of the general concept and of the explanatory cause; but they miss their purpose if the general and the cause be conceived as an increase merely of the subject-matter of instruction, *i.e.*, as an increase of the burden of the school, whereas they should be regarded as levers, *i.e.*, as means for increasing one's strength.

It is a defect of empirico-analytical developments that they can rarely furnish all the presuppositions needed for generalizing and finding the causes, but must content themselves with examples. The more mature pupils should be reminded of this circumstance and should be dissuaded from attempting—though only the most talented among them will be tempted to do so—the analytical development independently of the teacher.

3. Before taking up the synthetical development of an empirical matter, it is necessary that the single parts of the process be familiar, and that the results of the synthesis be recognized as the outcome of previous analyses and syntheses. This form of development is applied most in language instruction. The connected treatment of grammar, poetics, and rhetoric should be that of a synthetical development, which is in place after the pupils have, by the analytical method, become familiar with the single parts of the subject-matter. The finding of the parts of speech and of the parts of the sentence, all of which can be developed from the basic relationship of subject and predicate (ch. XLIII, 2), is an example of synthetical development. The

elements of the metrical system of the ancients afford another good illustration of synthetical development: the feet, verses, and stanzas developed from the two kinds of time duration, diplasic and isomeric,[1] which were modified and added together, as is clearly and convincingly shown in J. Methner's *Grundzüge der Metrik und Rhythmik*, 1881. The analytical method is the most natural for teaching the grammar of the mother-tongue and the art of language.[2] The theory of the art of language can also be taught analytically, *viz.*, by searching for definitions. The classification or division, the reverse of the definition, is a special form of synthesis that can be used with empirical materials. The systematic development of a definition or division, with the pupils co-operating, is one of the most pleasant tasks of the teacher.

Familiarity with the materials is likewise a prerequisite for the development of a rational content. If the material must first be obtained with great labor, it is vain to expect any elasticity in the mental operations. The abstract matter renders it particularly difficult to follow the course of development, and hence key-words or other distinctive marks should be used for showing the various stages in this course. The long demonstrations of mathematics, if unavoidable, should be divided into several; and the presuppositions of problems should be treated separately, and should be united only after the pupils have been familiarized with them. The process of solving problems and of proving theorems is analytical; but the synthetical method is used in finding problems and in drawing conclusions from a theorem proved. It is an advantage of mathematics that it alternates the two methods. In some cases it admits of the application of analysis and synthesis to one and the same object, and such cases are well adapted for familiarizing the pupils with the methods themselves.

CHAPTER LVI

Examples of Developmental Instruction

1. To illustrate the analytical and synthetical development of an empirical matter and to demonstrate, at the same time, how a system[3] is to be established and applied, we shall select

[1] Γένος διπλάσιον and γένος ἴσον, cf. John J. White, *The Verse of Greek Comedy*, London, 1912.

[2] Cf. *supra*, ch. XLVI, 6. [3] *Supra*, ch. L, 3.

the tense-formation in Greek, which is one of the most complicated problems of school grammar. The Greek conjugation has two formations, thematic and athematic, one with, and the other without, the thematic vowel. Accordingly, the old grammarians distinguished two principal conjugations, the one of the verbs ending in ω and the other of the verbs ending in μι, and this division has, for practical reasons, been retained ever since. Yet, in point of fact, the two methods of formation and the two principal conjugations do not coincide at all. The μι conjugation forms athematically only the present, the imperfect, and the strong aorist; but all the other tenses are formed thematically. On the other hand, the ω conjugation forms athematically the perfect and the pluperfect of the passive and the passive aorists, to which can be added some isolated analogous formations of the aorist and the perfect. Modern grammarians undertook to remedy the defect by dividing the conjugations according to the tense-stems. But this would necessitate that ἵστημι and the analogous forms be treated along with the present stem, and ἔστην, along with the strong aorist stem, which arrangement would disproportionately increase the matter of the respective parts. Consequently, the traditional division still commends itself to most teachers. Lest the pupils, however, forfeit what constitutes no mean part of the educational value of Greek,[1] *viz.*, an insight into the laws that govern the formation of the Greek verb, the teacher and pupils should, after having finished the conjugations, reunite what they have torn asunder and set aright what they have dislocated; and to show how this can be done, is the purpose of the following.

The starting-point should be the comparison of the two principal conjugations, as this will clearly show the difference between the thematic and athematic formations. In the two formations we perceive the further difference that the ending is joined either directly to the stem or to the thematic vowel added to the stem. Hence we have four different formations: 1. athematic formation on the pure stem, φη-μί; 2. athematic formation on the enlarged stem, δείκ-νυ-μι; 3. thematic formation on the pure stem, λύ-ω; 4. thematic formation on the enlarged stem, τύπ-τ-ω. Now we must inquire whether the other tenses have a similar formation. The imperfect, being derived from the present stem, need not be considered. Of the aorists, the pupils will readily place ἔστη-ν beside φη-μί, ἔλιπ-ον beside

[1] *Supra*, ch. XX, 1.

λύ-ω, ἔλυ-σ-α beside τύπ-τ-ω; and they will also perceive, without any difficulty, the analogy between ἐλύ-θη-ν and δείκ-νυ-μι. Of the perfects—to which the pluperfect also belongs—such formations of the active as ἴσ-μεν and others and the whole perfect passive belong to the first division. None belong to the second. The perfects ending in α belong to the third division; and those ending in κα, to the fourth. All futures are thematic formations on the enlarged stem, and belong, therefore, to the fourth division.

The following system embodies the results of this comparison:

φη-μί	ἔστη-ν	ἴσ-μεν	———
		λέλυ-μαι	
δείκ-νυ-μι	ἐλύ-θη-ν	———	
λύ-ω	ἔλιπ-ον	λέλοιπ-α	———
τύπ-τ-ω	ἔλυ-σ-α	λέλυ-κ-α	λύ-σ-ω

This system should be written on the blackboard, and the pupils should then copy and explain it. They should also give the proper headings for the horizontal and the vertical rows. They should, in brief, learn to know how much is condensed into the thirteen words; and one member of the class should discuss the scheme connectedly. Hitherto the method applied was analytical, since it ascended from the individual and specific to the generic; and now that the latter has been found, it will be well to proceed synthetically, *i.e.*, group the particular under the categories obtained. In the first place, we should supplement what is suggested by the system. Active and medial forms should be placed beside the passive, and the reduplicated forms should be given; ἔφηνα should be placed beside ἔλυσα; φανῶ, beside λύσω; specimens of contract verbs, beside λύω; and specimens of the other classes of verbs ending in ω, beside τύπτω. The athematic formations on the pure stem may be grouped, as in grammar, according to the final letters of the stem, etc. What has been grouped together in the system, should be compared with what is said in the grammar, as this brings out the relation between the two principal conjugations: the verbs in μι are represented by φημί, δείκνυμι, and ἔστην, and these forms may be separated from the others by a broken line. The system is applied by letting the pupils find forms that will fit into it, and to this end they should propose questions to one another. A further application of the insight into the

formation of the verb would be to compare the corresponding Latin forms. It is not difficult to demonstrate the analogy between *φημί* and *fers*, *fert*, etc.; between *λύω* and *lego;* between *τύπτω* and *flecto;* *ἔλιπον* and *legi;* *ἔλυσα* and *scripsi;* and *λύσω* and *amabo.*

Another method of applying what has been found, is to reflect upon the way which has led to the discoveries; and this will prove a preparation for the study of logic. In the present case the divisions have been applied most. The four divisions are based on the crossing of the following concepts: athematic, thematic, formation on the pure stem, formation on the enlarged stem. And these concepts themselves fall under the concept of formation-media. In the system itself the two concepts, kind of formation and tense, are crossed.

2. To illustrate the method of applying analytical development in the instruction in logic, we shall develop the concepts analysis and synthesis. We have, in ch. XLI, 2, developed these concepts synthetically, but we shall now, for the purpose of practical instruction, show their analytical derivation. This will, at the same time, give us an opportunity to illustrate how logic can be correlated with the other branches of the curriculum.[1]

The ascending thought-process of analysis and the descending one of synthesis are understood most easily in their application to concepts, in the form, consequently, of abstraction and determination. In the first place, the teacher should illustrate how new concepts are obtained from the old, namely, on the one hand, by abstraction, and, on the other, by determination. Examples taken from grammar are particularly appropriate. The discovery that Greek, Latin, German, English, and other languages are cognate, gave rise to the new and higher concept of the Indo-Germanic languages. On the other hand, the study of the history of the English language and of its dialects gave rise to a number of lower and narrower concepts: Old English, Middle English, Yorkshire dialect, etc., so that from the one concept, English language, there has been an ascending and a descending process, in the direction of the genus as well as of the species. Natural history, too, on the one hand, groups the species under the genus and, on the other, divides the species into families, and thus offers a large number of illustrations. Witness, on the one hand, the concepts of classes: canis, felis, mammalia, ruminantia, etc.—which had in many cases to be

[1] *Supra*, ch. XXIV, 3 and ch. XXXVI, 2.

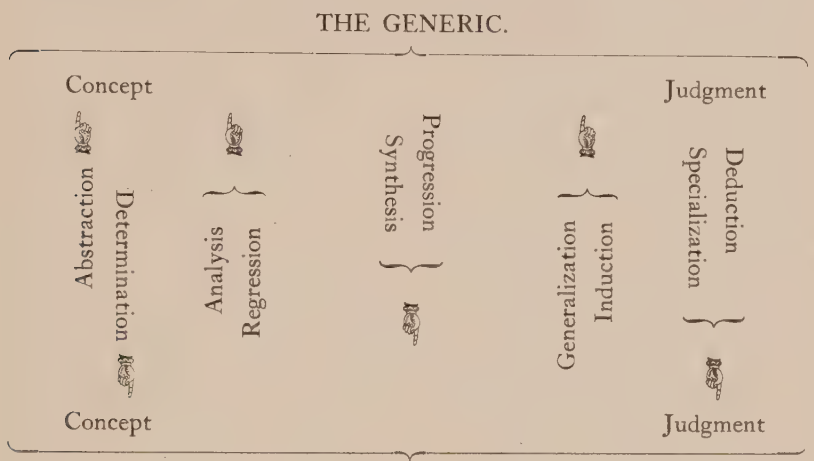
expressed by new terms—and, on the other hand, the concepts of the families within the species.

A similar process of ascending and descending can be observed in judgments, theorems, and cognitions. The theorem of Pythagoras, for instance, is the generalization of what has been observed in certain right triangles with commensurable sides. These angles are known as the Pythagorean triangles, whose sides are in the proportion of 3:4:5, of 6:8:10, of 5:12:13, etc. The theorem of Pythagoras, however, can be amplified in a double way. First, the relation which it expresses between squares, is true of all similar figures, so that all similar polygons constructed upon the legs are equal to the similar polygon constructed upon the hypotenuse. Secondly, its formula: $c^2=a^2+b^2$ in the changed form: $c^2=a^2+b^2-2ab \cos \gamma$ can be applied to all triangles. The theorem of Pythagoras will then appear as only a special case of more general theorems. Every application of the theorem—for example, to apply it to find a side of the triangle—is a determination; therefore, also a specialization. The latter is continued still further by substituting numbers for the letters.

The process of generalization is called induction, if the ascending process of the reasoning is based on the bringing in (ἐπάγειν, *inducere*) and comparing of a plurality of facts, chiefly of observed facts. The reverse is deduction, which is the process of gaining new knowledge by determining more closely general truth.

The element common to abstraction, generalization, and induction is the ascending process; or, to use another illustration, the backward movement to the generic as to the conditioning. The element common to determination, specialization, and deduction is the descending process or the advance toward the specific. The ascending process is regressive and the descending process is progressive. The ancients, however, termed the regressive process analysis, for they had in mind the resolving and the separating of the special traits; and the progressive process they called synthesis, for here they had in mind the adding and joining together of such traits. The analysis is, as is apparent from its etymology, a resolving (ἀνά up and λύειν to loose) of a thing into its essential elements, a separating, therefore, of the essential traits; while the synthesis implies a πρόσθεσις, the adding of more specific determination. The words of Alexander of Aphrodisias, quoted in ch. XLI, 2, may assist in fixing these points in the mind.

The following "system" is a summary of the results of this development:



We may now consider our task done, but we might also trace the concepts analysis and synthesis beyond the domain of logic, for they signify solution and composition in general. In grammar the objects of these activities are words, *i.e.*, language elements; in metrics, the time durations; in drawing, the lines; in chemistry, the elements, etc. But in logic this is different, because here we have no resolution into parts, but a resolution of the thought contents—viewed as elements of knowledge—into more simple or more general elements, and a corresponding composition.

3. For illustrating developmental instruction in mathematics we select a group of algebraic problems, which, though found in text-books, stilll do not receive sufficient attention in the schools. And this is to be regretted, particularly since it is just such problems as we have in mind that afford an opportunity for correlating mathematics with other disciplines. We mean the problems dealing with the meeting of moving bodies, which belong to elementary mechanics, and are, therefore, based only upon the concepts of magnitude, space, and motion.

The teacher should, above all, try to let the problems issue, as far as possible, from each other, and he should, therefore, begin with the simplest case and then follow it up to see how it can be varied and complicated. The simplest case we have

in the following question: where will two bodies meet that start out at the same time from the points A and B respectively, and that move toward each other with the same velocity? It is obvious that the centre of the course will be the meeting-point. But we must even here show that in answering the question *where?* we answer also the question *when?* and that for the following reasons: the bodies meet at the time that they arrive at the centre of the course, or in other words, in half the time it would take them to pass over the whole course.

The simplest modification would be to let one body start out before the other. The distance covered by the first body must de beducted before the course is halved. Here is a second modification of the original problem: let the velocity of the two bodies be unequal, the one making m and the other n units of distance in one unit of time. Because AB as well as m and n are distances, the constructive solution naturally comes first. The distances are brought into connection by being placed along the sides of an angle, on the one side AB, on the other m along AC, and n along CD, a prolongation of AC. Then draw the line DB and a parallel to it at C, which will intersect AB at E. According to the theorem of proportional lines, E is, then, the meeting-point of the two bodies.

The pupils are to give the algebraic solution also. It will be most simple with the meeting-point known and the velocity required. The velocity of the two moving bodies will be equal, if the meeting-point lies halfway between A and B. If the meeting-point divides AB into $\frac{1}{3}$ and $\frac{2}{3}$, the proportion of the velocity will obviously be $1:2$; if it divides it into $\frac{2}{5}$ and $\frac{3}{5}$, the proportion will be $2:3$; if into $\frac{3}{10}$ and $\frac{7}{10}$, the proportion will be $3:7$; and in general, if it divides it into $\frac{n}{m+n}$ and $\frac{m}{m+n'}$, the proportion will be $n:m$.

This solution is analytic and inductive. If, however, the meeting-point be required, the solution must be synthetic and deductive. We must remember that two things are known of the two distances over which the bodies pass until they meet, namely, the sum AB and the proportion $m:n$. The two distances can be determined without an equation by considering the following: If m and n be equal, then AE as well as EB were the half of AB, therefore $\frac{1}{2}AB$; but AB requires another factor to yield AE, and again another factor to yield EB. But these factors must, like the two halves, result in 1. But this will be the case only in two magnitudes which have m and n as factors

and $m + n$ as divisor, therefore in $\frac{m}{m+n}$ and $\frac{n}{m+n}$; and hence the two distances are $\frac{m}{m+n}AB$ and $\frac{n}{m+n}AB$.

In the third place, the pupils should make the technical, algebraic solution, in which either one of the partial distances or both are unknown and where the equations containing what is unknown must be formed. A further variation would be to consider not only the partial distances as unknown, as hitherto, but also the whole distance or one number of the proportion as the thing required. The proportion found should now be applied to special cases. Instead of the two moving bodies, the teacher may give problems dealing with two travellers, two railroad trains, armies, etc., and particular attention should be given to the actual velocity of the given motions. And it will be labor profitably spent to have this velocity even memorized, for such examples are well adapted, not only to illustrate abstract relations of magnitude, but also to develop and widen the sensuous horizon by imparting knowledge of life and nature.

Only at this point should problems be given which deal with objects moving in the same direction. Here we need consider only the case of unequal velocity and the starting out at different times. In this case the question will arise concerning the point where the slower body, which started out earlier, will be overtaken by the faster one following. Here again the constructive solution should be given first. But to it should be added, besides the algebraic solution, a third which follows the motion of one of the two bodies, and which uses the geometrical series for determining this motion. The body following must pass over the distance AB, *i.e.*, the lead of the slower body; then the distance which the latter covered in the meantime, therefore, $\frac{m}{n}AB$; finally the distance which the slower body covers during this time; therefore, $(\frac{m}{n})^2AB$, etc., to $(\frac{m}{n})^pAB$, where p may be considered as any known distance covered. By summing up this series we shall obtain the distance covered by the slower body until both bodies meet.

We may here consider the first difficulty of what is apparently irreconcilable, that the same distance which before was conceived as included in definite limits is finally considered as consisting of infinitely many partial distances, and then also the further difficulty, whether the infinitely many summands must not result in an infinite magnitude and thus prevent a meeting of the bodies. It is known that such problems occupied

Zeno the Eleatic, whose second argument against space concepts is taken from the race of Achilles with the turtle.[1] The controversies connected with this matter do not belong in the schoolroom, as the pupils can not grasp the import of the question; but the historical mention of Zeno and his argument are instructive and stimulating.

For applying the formula pertaining to bodies moving in the same direction we have not only the same examples as before: travellers, railroad trains, etc., but also new ones besides, as the bullet of the hunter overtaking the running hare, etc.

4. We have hitherto considered the course of the moving bodies to be rectalinear, but we shall now consider it as circular. Here we shall have a new factor, the repeated meeting of the two bodies; and before meeting the questions *where?* and *when?* we face the question *how often?* It is readily seen that this simplifies the solution, because the number of meetings divided into the circumference gives the partial distances required. The reason for the simplification should be stated: the number of meetings is an absolute element, whereas the conditions of space and time are relative and, therefore, more circumstantial.

Among the applications of this problem, the relation of the clock hands is the chief. The clock is a valuable help in teaching mathematics, and a dial with movable hands should be used frequently for illustrative purposes. In form study it can be used for showing the increasing and decreasing of angles and the graduation of circles. In geometry it can be used for the theory of circles, and even in trigonometry it can be put to some use. An interesting clock problem in algebra is to determine how often, where, and when the minute hand and the hour hand meet. The observation should precede the computation. The observation will arouse the curiosity and elicit the co-operation of even the dullest of the class. This problem, too, should be solved in several ways, the preference being given to the simplest which proceeds from the number of movements. For the sake of variety, we may compute, first, the meeting of a second hand (revolving around the middle of a dial) with each or with both of the other hands, and, secondly, the meetings of the hands, if they move, not in the same, but in the opposite, direction. All these computations suggest the question of how the hands can be made to move with different velocity, and so advise the examination of the inside of the

[1] Aristotle, *Phys.*, VI, 9.

clock. In this way, material from physics and technology can be easily correlated with our group of problems.

It is in astronomy, however, that the problem of revolving bodies can be applied to the greatest educational advantage; and the relation of the hands of the clock can lead directly to that relation of the sun and moon which is seen from the geocentric viewpoint. The period of revolution of the minute hand is considered as the time that it takes it to arrive again at a point which it has just touched, but it could also be determined according to its meeting with the hour hand. The former period of revolution amounts to 60 time minutes; the latter, as the computation showed, amounts to 65; the former is the twelfth part, and the latter, the eleventh part of 12 hours, *i.e.*, the period of revolution of the hour hand. Analogously, the moon's period of revolution is computed either as the time between its first and second arrival at a fixed star, or according to its meeting with the sun. The former period is the sidereal month and amounts to 27 days, 7 hours, 43 minutes, and 11½ seconds; the latter period is the synodic month (*σύνοδος*, meeting), lasting from new moon to new moon, and amounts to 29 days, 12 hours, 44 minutes, and 2 seconds. The sidereal month is about the thirteenth part of the year, the period of the sun's revolution; while the synodic month is about the twelfth part. Here also the observation of actual conditions and the visualization of these conditions should both go hand in hand with the computations. The observations as well as the computations elicit a series of questions, among which the following is the principal one: why does the meeting of the moon and the sun not produce a solar eclipse? The teacher can take only the first steps toward answering this question: he should show the causes which complicate so much the relation between the sun and the moon. The teacher of mathematics will have done his duty if he has succeeded in getting his pupils to recognize the space relations as the foundations of the unlimited complications of the actual.

The initial supposition was that the bodies meet on the same rectalinear course, but we shall now assume the two bodies moving in converging courses. The question concerning their meeting must now be formulated thus: under what conditions will the two bodies arrive at the point of intersection of their courses? This problem must be solved by trigonometry, which deals with the triangle whose sides are formed by the courses of the two bodies and the distance between their starting-points.

Here, too, we have at hand the same examples for application as before.

But the most instructive example is the one taken from the hunter shooting birds. Let the hunter see a bird fly up; let him know the distance from the spot whence it rose into the air, also the angle which the course of the bird makes with the ground, and finally also the proportion of the bullet's velocity to that of the bird's flight; and from these data one can figure out the angle at which the man must aim to strike the bird. The instructive element lies in comparing this calculation with the actual doings of the hunter, who can only estimate all the magnitudes to be considered, and even this he does half unconsciously. Add to this the further difficulty the hunter is under of having to reckon with the fact that the courses of the bullet and of the bird are not exactly rectalinear. This will lead to psychological considerations of space and time concepts and of motor feelings, which will be stimulating even if only a few words be said on the subject.

If the problems suggested be handled with a view to their inner relationship, so that the pupils will recognize the transition from one to the other, then this interrelation may itself be assigned as a subject for a composition, and so afford an opportunity for expressing thought in a strictly general form. Thus our group of problems will occasion problems beyond itself and the abstract relation of magnitude; and a course in mathematics planned according to the principles illustrated here would no longer be isolated, but would either find or create on all sides points of contact with other subjects of the curriculum.

PART V

THE SYSTEM OF EDUCATION

I

THE SYSTEM OF EDUCATION FROM THE VIEWPOINT OF THE INDIVIDUAL

CHAPTER LVII

Introductory

1. We have seen that there are three factors that assist the individual in acquiring an education: first, on a large scale, the organization of the content of education which finds expression in the curriculum; secondly, the adaptation of the single studies to the whole course; and, thirdly, the instruction and its technique, *i.e.*, the teacher's activity. Thus the educative process of the individual is continually assisted and directed by the co-operation of other individuals, for it is they who instruct, who adapt the single branches, and who outline the whole curriculum. However, the individuals co-operate in this way not as individuals, but as banded together into more or less regular groups. It is a plurality of teachers that instruct; and the adaptation of the single branches, though the work, perhaps, of an individual, is still based on the common practice of the schools; and any course of study, worthy of the name, is conditioned on the teaching and learning of previous generations. We shall now take up the study of this collective and social side of the educative process, and shall preface it with a preliminary survey of the whole field.

The aggregate of the agencies devoted to the work of education and conditioned on collective activity we shall term the system of education. The core of the system of education is represented by the institutions that give collective instruction, and these are comprised under the term school system. These terms, educational system and school system, are often used without distinction, and under certain circumstances this is admissible, as is the case with every denomination *a priori;* yet it is not an exact use of the words. In point of fact, the system of education comprises certain agencies besides the regular school

system; and to discover these will be the first object of our inquiry. To this end we shall again take up the disjunction employed above[1] between the regular educational agencies and the sources of informal education.

The system of education must be varied enough to allow the individuals to obtain the ends of education, and so we should recall what has been stated concerning the ends and aims of education.[2] These ends and aims are many in number and admit of various interrelations among themselves, thus bringing about that differentiation of education which finds expression in the different kinds of schools. Thus we have found the second object of our inquiry. This second object clearly suggests our third object also; for each of the different kinds of education implies a plurality of steps; and the school corresponding respectively to each kind of education, comprises a plurality of courses. When dealing with this third subject, the grading of schools, we must likewise recall what has been said (in ch. XXXIX) concerning the adjustment of education to the different age periods.

After having in this way examined from various viewpoints the agencies of education, we shall have to look at the subject in its entirety; and this will serve the purpose of showing the system of education in its composition, differentation, grading, and unity.

2. So far, however, the subject of social educational activity has been examined from the viewpoint of the individual only; but it must be studied from the viewpoint of society also. The content of education is not evaluated properly by being considered merely as an educational instrument, *i.e.*, as a help to the individual (for it must be regarded as a content of teaching).[3] And similarly, the educational agencies are not justly appraised, if they be adjudged merely for what they do for the individual, to the neglect of what they mean to the community by reason of the independent value of those intellectual treasures that are committed to the schools. But just this evaluation is impossible unless the viewpoint be that of the community; and so we have occasion to acknowledge again the truth of Aristotle's saying, "What is to be done for a single part, must naturally be determined according to what is to be done for the whole."[4]

Political economy views the demand and supply, the buying and selling as the ebb and tide of economic values. And, analogously, the offering and receiving, the giving and taking of

[1] *Supra*, ch. XXXIV, 1.
[2] Ch. I–VII.
[3] *Supra*, ch. X, 4.
[4] Ch. XXXIV, 5.

intellectual values in education, may truly appear, if looked at from the social viewpoint, as an interchange and transmission of intellectual treasures (*geistige Güterbewegung*). The schools will then appear to be a system of canals, or rather a network of interlacing arteries, which carry the life-sustaining elements to the different parts of the social body and thus renew continuously its various textures. After this process has been dealt with, we shall have to take up the study of these textures, *i.e.*, the units whose interrelation constitutes the whole of the social body.[1] These units must be examined, first, as representing the places where the intellectual treasures are produced, therefore, as the agencies of the system of education; and, secondly, as representing the termini in the interchange and transmission of these intellectual treasures, therefore, as the objective points of the social process of education.

3. Having arrived at this stage of our inquiry, we may regard the system of education as the organ of the social body; and the way will then be open for viewing it as an organism also, a conception utterly impossible from the individual standpoint, since from it one can not see beyond the school system. In this doctrine that the system of education is an organism, all the threads that extend from the various subjects dealt with in our science of education, are seen to meet. This doctrine is the capstone of our synthetic presentation, as being the last σύνθετον, which should, at the same time be a ζῶον, just as it would have to be the starting-point in a purely analytical inquiry. The activities of all social units should meet in the system of education as in an organic whole. It is the arterial system of the interchange and transmission of intellectual treasures, for these it distributes organically and systematically among the classes of human society, and to the individual it affords an opportunity for realizing his own educational ideals. In the system of education we see the educative process condensed and the system of studies realized. It is the ground of didactic, formative, and technical activity, and the place for evolving the methods and for fixing the rules of the art of teaching. Even the historical inquiry, upon which we have grounded our investigation, contributes to the system of education, for the practical end we had in view when tracing the historical development of education was to discover in it directions to guide us in organizing the educational system.

[1] Vol. I, Introduction, I, 2.

Thus we have found the general viewpoints from which we might deal with special questions, but brevity must be our watchword in this respect. Hence we must be content with treating in a few final chapters of actual school conditions and with merely suggesting the conclusions that follow from our premises.

CHAPTER LVIII

Educational Agencies

1. The relation between teacher and pupil we designated, in Part IV, as the personal basic relationship of the educative process. But we must now add that this relationship is only one form of the personal basic relationship, and, moreover, not even the most primitive form. The beginnings of education—of the individual as well as of society—show that the relation between parents and children is the most primitive form and one in which there is a union of intellectual and moral education. The first gift of the old generation to the new, *viz.*, the mother-tongue, is named after the mother; and the two vital factors that join the intellectual gifts into the most intelligible units, *viz.*, the father's house and the fatherland, are named after the father. There is a second relationship which is likewise more primitive than that between teacher and pupil, namely, the relationship between master and apprentice. This relationship also implies educational work, but the latter is of less importance than what is to be produced by technical or artistic skill; and actually the master of the apprentice confines his activity to the workshop or the studio. The relationship between master and disciple is higher, for its object is the imparting of the highest gifts, which are to be received with the deepest devotion; and in transmitting them there is a blending of intellectual and moral influences. The relation between educator and pupil stresses the moral influences, while that between teacher and pupil, which was our starting-point, stresses the intellectual.

The last two relationships have this special feature that they can produce their own agencies, while the other relations do not need any agencies. The agencies required by the relationship between educator and pupil must be patterned more or less closely after the family, because the moral assimilation, upon which the moral training is based, requires a common life

and all the points of contact established by it. But the agencies employed by instruction are peculiar to it, and, though bearing some semblance to kindred activities, they are not patterned after any of them. It is the concept of the school that here enters our inquiry.

2. The school is the home of collective educational activity. "There is perhaps no more remarkable instance in the history of language of the perversion or conversion of terms to express the very opposite of what they originally meant than that of the word school."[1] Σχολή signifies, not work, bur leisure, not the road leading to knowledge, but the mental pleasures of the educated; not the crowd of learning pupils, but the meditation of the mature mind as being the most worthy occupation of one's leisure hours.[2] It is interesting to trace how the word eventually came to assume the very opposite meaning. The leisure was regarded, in the first place, as a time free from employment, both public and commercial; then as an occupation with intellectual things; and, since this occupation naturally suggests an exchange of ideas, the leisure came to be considered ultimately as the time or the meeting for treating intellectual matters, either in a purely social way or for the purpose of teaching and learning. Among the ancients the terms σχολή and *schola* signified especially the discussion forums or the talking shops which sprang up in the suburban gymnasiums, where the gilded youth of the city gathered about a philosopher. In this sense the two terms were coextensive in meaning with αἵρεσις (whence heresy) and *secta*. But they denoted also the lecture and the class period. In a more general meaning, every place devoted to mental activity, to the work of the Muses, was known as a *schola;* and with this service of the "industrious Muses" the concept of work entered into the idea of leisure.[3]

In ecclesiastical language, the term signified religious instruction, and it is in this sense that the Council of Constantinople decreed, in 681: "*Presbyteri per villas et vicos scholas habeant.*"[4] Later, the monasteries also were termed "*scholæ*

[1] Monroe's *Cyclopedia of Education*, s. v. *School.*

[2] Plato associates σχολή with ἐλευθερία, *i.e.*, the study that is pursued freely and not for the purpose of material profit, and he calls it the home of philosophy: *Theæt.*, p. 175 . . . τῷ ὄντι ἐν ἐλευθερίᾳ τε καὶ σχολῇ τεθραμμένον, ὃν δὴ φιλόσοφον καλεῖς. Aristotle calls the σχολάζειν pleasure, happiness, and bliss: *Pol.*, VII, 14 (15): τὸ δὲ σχολάζειν ἔχειν αὐτὸ δοκεῖ τὴν ἡδονὴν καὶ τὴν εὐδαιμονίαν καὶ τὸ ζῆν μακαρίως.

[3] Auson., *Idyll.*, IV, 6: "*Graio schola nomine dicta est, Justa laboriferis tribuantur ut otia Musis.*"

[4] Vol. I, ch. XVII, 1.

Christi," besides being called "*gymnasia*," that is, training places for Christian perfection. In liturgy *schola* is used to designate those who respond to the invocations of the pontiff. The Jewish use of the term establishes a still closer connection with religious worship, for with the Jews *schola* implies the same as synagogue.

In the Middle Ages *schola* was used to designate the guilds also, and the full members of the guilds were called masters.[1] The ancient use of *schola* for prelection was retained, and so the series of university lectures delivered during a semester were called *scholæ*. At the same time the term began to assume its present meaning of an institution of learning. The Renaissance invented the pun *schola—scala*, and this is joined with another play on words *studium—stadium* in the following distich:

"Est studium stadium: frustra hic se nemo fatigat:
Ad celsos apices proxima scala schola."

For determining the true meaning of the word school we must begin with the concept of teaching. To teach is to impart directly to another an intellectual content.[2] This presupposes a certain application, but not necessarily a regular procedure, for the teaching may be either formal or informal. The agencies employed in teaching may be more or less independent, which depends—leaving aside other considerations—upon the number of pupils. Home-instruction may also be a regular agency for carrying on the work of teaching; but it can not be said to be truly independent, because it lacks, as a general rule, certain essential features: the special locality, the proper didactic apparatus, the set time, etc. If, however, these features are added to home-instruction, the latter will represent the simplest form of the school. Hence we may define the school as an agency devoted to the work of the teaching which is relatively independent and concerned with a plurality of individuals.

To define the school as an institution for teaching is less exact, because the idea of institution connotes that the establishment continues despite any change that might occur in the teaching staff or the student body, whereas this concept of permanency is not essential to the idea of a school, because a private school might well cease to exist with the death of its headmaster. The teaching in the school has, for the most part, the character of instruction, which means that the teacher must see to it that the pupils really assimilate the knowledge offered.

[1] Vol. I, ch. XVIII, 6. [2] *Supra*, ch. XXXIV, 2.

Schools, however, of higher learning confine themselves to the work of teaching, since they trust that the students, being more mature, will of their own accord attend to the work of acquiring knowledge. The purpose of educating the pupils will largely modify the school, and the younger the pupils the more necessary will it be to allow a large scope to discipline and the formation of habits, and the more inseparable will the moral and intellectual ends be.

If the pupils board at the school and lead a common life under the direction of the school authorities, then the school is an educational institution. This is the oldest form of the school, and this form is found in the ancient countries of the East and in the school system of the Early Church. When certain modern schoolmen urged that "educative schools" be established without the special features of boarding schools for doing the work implied in Herbart's "educative instruction," they used "educative" in the broader sense of exerting a moral influence on the pupils. But though this term may serve to recall and to restore to education its old moral and religious end, the expression itself can not be called happy, since it confounds education, which, like the engendering and rearing, is founded on the common life, with purely intellectual training, while the two concepts should, for the sake of scientific precision, be kept separate.[1]

3. The school is the smallest unit, the fibre, as it were, which, being multiplied, constitutes the organism of the school system. Schools may be multiplied for various reasons. If the same needs and conditions obtain in different localities, it is likely that the schools in these different localities will resemble one another, as is seen in the ancient schools. It may be, too, that certain schools are typical for others, so that older schools can be said to produce, like shoots of the parent tree, new foundations, as was the case with the earlier monastic schools[2] and with the city *gymnasiums* of the 16th century.[3] Or, finally, a central authority may ordain that a certain school be typical for all new foundations; witness the Jesuit schools[4] and the state reform of schools in the 18th century.[5]

The quantitative multiplication of schools differs from the qualitative. New educational needs create new kinds of schools, which, however, will generally be but modifications of the pre-

[1] Vol. I, Introduction, I, 7-10. [2] Vol. I, ch. XVIII, 2.
[3] Vol. I, ch. XXIII, 2. [4] Vol. I, ch. XXIII, 3. [5] Vol. I, ch. XXVII, 6.

vailing type. With increased educational needs the courses of study will first increase in content; but ultimately the new needs will give rise to schools that are independent of existing institutions. Thus the *gymnasium* branched off from the university as a preparatory school for the university,[1] and the *Realschule* branched off from the *gymnasiums* by allowing more scope to the experimental sciences,[2] and the elementary school expanded into the burgher school and kindred institutions.

The development of the school system as a whole can be treated adequately only after the social forces, which influence it, have been dealt with. But we may even now refer to the peculiar circumstance that this development proceeded from separate points. The elementary instruction and the training for the learned professions were the first to adopt the forms of schools. The university and the primary school were historically the first schools, while the intermediate grades of schools were organized later as modifications of the earlier types. The training for the mechanical professions was the last to adopt the form of the school, and no technical school can ever fully replace the relationship between master and apprentice.

The school system, even when fully developed, is not coextensive with the system of education. The schools are, indeed, the highway of education; but branching off from it and parallel to it are the paths pursued by private instruction, practical training, and the other varied forms of learning.

4. Private instruction is numerically out of all proportion to the schools. Nevertheless, it is of great importance as being the form in which very influential men and often truly great men receive their training. Herbart recognized the value of private education, for he says, "The world depends on but a few—a few rightly cultured ones can guide it aright."[3] Many great men received their first instruction at home, and most of the world's great educationists served there the years of their apprenticeship. If the schools are best adapted for developing educational methods and for outlining the curricula, then home-instruction has proved most helpful in leading to new ideas and

[1] Vol. I, ch. XVIII, 8. [2] Vol. I, ch. XXVII, 7.

[3] *The Science of Education*, transl. by Henry M. and Emmie Felkin, London, 1892, p. 93. Cf. Locke, in Quick's edition of his work, *Some Thoughts concerning Education*, p. LII., "The gentleman's calling is most to be taken care of; for if those of that rank are by their education once set right, they will quickly bring the rest into order."

new paths, and in bringing out the finer shadings and the more delicate points of method. School-instruction is, compared with home-instruction, machine-made in contrast to what is hand-made. Private instruction calls forth all the powers of both teacher and pupil: "all that we know we should use, and support it with all that we are."[1] The private tutor enjoys more liberty in using the educational instruments; his eye is trained to note individualities; and he is placed in a position where he can direct, down to the minutest details, the co-operation between the subjective and the objective factors. These advantages of private instruction make it preferable for certain classes of pupils. For girls, it is as a rule, superior to school-instruction, because the latter is less apt to develop what is best in woman's nature and more apt to foster certain feminine weaknesses. Furthermore, with very gifted pupils, private instruction results in quicker progress and affords less occasion for pride and conceit. If the pupil, finally, shows talents in a particular direction, the private teacher can—and that better than the school teacher—correlate all the studies accordingly and so apportion the interest as to prevent a one-sided and undue attention to a single subject.

5. The practical training, which is based on the relationship between master and apprentice, must also be allowed its due place in the whole of the educational system. One reason is that this practical training has historically in many ways conditioned the system of instruction. Another reason is the fact that the "mute and practical wisdom of the workshops"[2] will ever supplement, to some extent, the instruction of the schools. Hence Comenius proposed, in his *Didactica magna*, the master of handicraft with his clever skill as the teacher's model. Schleiermacher also characterized the different kinds of schools by comparing them to the conditions among artizans: the school he likened to the intercourse between masters and apprentices; the university, to the intercourse between masters and journeymen; and the academy, to the meeting of masters.[3]

Lectures, orations, and recitations, though they lacked the form of regular instruction, played an important rôle in ancient education. Long before Homer was read in the schools, rhapsodists, who wandered from place to place, spread the knowledge and philosophy of his epics. The sophists of a later age were

[1] Herbart, *Pädagogische Schriften*, edited by Willmann, I, p. 239.

[2] *Supra*, ch. XXXII, 1.

[3] *Gedanken über Universitäten*, p. 23.

itinerant lecturers and commanded large audiences. The rhetoricians of the Empire, also called sophists, entertained and instructed their audiences; and thus they supplemented the work of the professional rhetors. The minstrels and minnesingers of the Middle Ages preserved the knowledge of the olden tales and legends and also prepared the way for artistic poetry. The poet-philologists of the Renaissance, the precursors of the learned antiquaries, wandered about from place to place; and both they and their successors were the organs of publicity for the new learning, which office was later committed to books and periodicals. But even at the present time, lectures play no small part in popularizing science and learning; witness the university extension work in England and America. Still the university extension courses, the summer schools, and the chautauquas can not compare in their results with what is being done by the popular magazine, the reading circles, and correspondence courses. Lecture courses, however, have historically been of chief importance in preparing the ground for new educational ideals. It was by lecturing and, partly, by travelling from place to place that the first Humanists and, in the 18th century, the natural scientists secured so large a following.

6. All the educational agencies that we have been considering, are based upon a personal relationship; but the learning from books may be independent of this relationship. Books are at the same time the most important didactic instruments of the school, and Comenius could justly claim the school to be the "workshop for transfusing knowledge out of books into men."[1] For the same reason we may regard instruction as the staging of the text-book, and such expressions as lessons, recitations, prelections, etc., lend color to this view.

But here we shall consider the book, not in its relation to the school, but as being itself a teacher and part of an educational institution, *viz.*, the library. The ancients called books "written records for the learned and monuments for the unlettered."[2] J. M. Gesner praised books still more when he called them "the holy custodians and teachers of the sciences."[3]

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[1] *Opera did.*, II, p. 537: "*Schola est officina transfundendi eruditionem e libris in homines.*"

[2] Œnopides in Joh. Damasc. in the appendix, Gaisford, Stob. *Ecl. phys. et eth.*, II, p. 152: ὑπομνήματα τῶν μεμαθηκότων, τῶν ἀμαθων μνήματα.

[3] *Isagoge in erud. univ.*, § 84.

Books are independent sources of knowledge and conserve it even better than the schools. The latter are subject to many influences making for change, while *littera scripta manet*. Books, indeed, have often started new movements in education. And even if a book may have assumed the hard and rigid forms of a monument, yet the time may come, as experience has proved, when it shall again be studied as the record of the choicest thoughts and deeds. The medieval libraries, for instance, preserved more of the ancient classics than were read in the schools of the period, and to the libraries of the Renaissance we are indebted for preserving—though without appreciating its value—the poetry of the Middle Ages.

Books command larger audiences than the teacher, and the great thinkers of the race have wrought more by their books than by their teaching. How often do we find in biographies that a book shaped the whole career of a man's life, or that the home library laid the foundation of future greatness. The book has a wider sphere of influence than the school for the further reason that reading is not confined, like schooling, to one period of life. The graduate who has completed his course of study, has not thereby completed his course of reading; rather he will then only—if his education at school has been at all thorough—begin the true work of reading. The school should consider itself in duty bound to teach its pupils the art of reading, and should, therefore, regard the pupil's library as an integral part of its organism. The teachers' library represents a second point of contact between the school and the world of books.

The literature that serves the needs of education, is based ultimately on the classical works of a nation. The latter constitute, on the one hand, the chief content of the language instruction—they are the *livres classiques*, *i.e.*, the school-books. On the other hand, they are the basis of current literature, which gives expression to the ideals and sentiments of the present, and which is also the most important subject of the informal educative process. The classics may likewise supply the material for juvenile literature. For instance, Hawthorne's *A Wonder Book* and *Tanglewood Tales* are modern versions of ancient classical myths. This educational literature will serve its purpose, if its various elements remain connected, that is, if there be a mutual interrelation between the school and life, between the study and the enjoyment of books.[1]

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[1] *Supra*, ch. XIX, 3.

7. The educative process that is concerned with the acquisition of knowledge, also employs two kinds of helps. The first kind forms the basis of instruction, and the second embraces the sources whence knowledge can be obtained in a free and informal way. The first represents the elementation of the respective science; and the second represents its popularization. Both kinds of treatment have in common that they adapt the matter to the understanding of the untrained mind by selecting, simplifying, and abridging what is to be presented to the pupil or reader. Both will the more successfully attain their purpose the more they preserve what is peculiar to the respective science; hence they must emit, so to speak, the spirit of it. It requires the skill of the trained artist to compile a good textbook or to write a successful essay in popular science.

For the rest, the elementary textbook and the popular science book will differ much because of their different ends. The elementary textbook must furnish the foundation of extensive knowledge; but the popular science book should gain the reader's interest and stimulate his curiosity. The former is propædeutic in character; the latter is esoteric. The former tries to give a foretaste of science and scientific method; the latter is satisfied with stating the results of scientific research. The textbook is concerned chiefly with the educative content of a science; while the principal function of the popular science book is to create interest. The textbook must necessarily be concise and brief in the treatment of a vast subject; but the popular work must have a certain fullness of treatment, if for no other reason than that it must itself do what is done for the textbook by the teacher, *i.e.*, establish points of contact with life. The former must beware especially of dry-as-dust presentment; and the latter, of shallowness and superficiality. The textbook must present the first principles of the science, illustrate them, and make them the subject of many exercises; the popular science book must so present the varied and interesting matter of the science as to let the first principles peer through. The sciences in which the technical factor is essential, for instance, grammar, and mathematics, scarcely admit of popular treatment. Grammar admits of popular treatment only in the form of purely practical exercise books, and mathematics only in its connection with astronomy and the science of the calendar. Those sciences, however, that are primarily empirical, admit readily of being treated popularly. Philosophy can be treated in both an elementary and a popular way, but its elementation is easier than its popularization.

Many popular science books have gradually been introduced into the schools as textbooks; some of the didactic poems of the Alexandrians, the earliest known specimens of popular science works, were used in the schools as textbooks.[1] But the reverse also occurred: textbooks became popular with the masses; thus the *Orbis pictus*, originally a school-book, became a favorite juvenile. Some didactic books written for the young combine in a happy way the distinctive features of the textbook and the popular science book.

In speaking of literary sources of education, a word must be said of periodicals. With the exception of the calendar—the oldest form of year-book and a valuable source of information for the masses—periodical literature in the form of newspapers and magazines is of comparatively recent date. The 18th century saw the beginnings; but the full development and, one may say, the flood of newspapers and reviews is the product of the 19th century.[2] This class of literature is certainly varied enough in character, and supplies, if used judiciously, much knowledge and information. It keeps us *au courant*, informed of and in touch with the present and its interests, while it is the past that generally speaks to us from books.[3]

[1] Vol. I, ch. IX, 7.

[2] There is an interesting list of early periodicals by J. Joach. Schwab, reprinted in the fourth edition of Morhof's *Polyhistor*, Lübeck, 1717.

[3] The example of Lars Mœller, an Eskimo, proves convincingly that the newspaper may serve as a primer, for, though Mœller had no reading matter available except a newspaper, he taught his countrymen how to read. Mœller died in 1902, and it was then that the newspapers reported the interesting case. Mœller had been one of Professor Nordenskjöld's Eskimo guides. Being clever and intelligent, he soon adopted the civilized ways of Nordenskjöld and his men, who also taught him how to read. Whenever his leisure permitted, Mœller would steal off into a corner of the hut and spell out the words of a book or newspaper. When Nordenskjöld was about to leave for Sweden, Mœller assured him that he had resolved to adopt the profession of newspaper editor. This piece of news raised a laughter among the Swedish explorers. A newspaper editor in Greenland? And even granted that the seemingly impossible were made possible, who would be the readers, since Lars Mœller was the only Eskimo who could read? But Mœller explained that he would first bring only pictures, which he would first sketch on wood and then make prints of as well as he could. He was sure he had invented a good process for doing such work. By means of the pictures he would then teach his countrymen how to read. Having returned to Sweden, Nordenskjöld sent his Eskimo friend a printing press and types, paper, printer's ink, and all that was needed for publishing a small newspaper. Not long after he had received this shipment, Mœller brought out the first number of his *newspaper*, which he proudly named *Reading*, though it contained pictures only. He set out on his snowshoes to circulate the first issue of his newspaper and left a copy in the hut of every one of his friends and acquaintances. He established several

8. But it is just in connection with periodical literature that the dangers of desultory and aimless reading are most obvious. The thoughtless reading of anything and everything, the cramming and gorging with mental foodstuffs will not only contribute nothing of mental strength, but will even unfit the reader for the task of assimilating wholesome mental food. The ancients were alive to the evils resulting from omnivorous reading. "Lest the reading of many writers and of various books," says Seneca in his second letter, "produce an unsettled and restless habit of mind, we should linger long with certain writers and draw from them the food for our minds, for only in this way can anything be fixed in the soul. He who is everywhere is nowhere. They who spend their lives travelling, may have made acquaintances enough, but they will have no true friends. The same is true of such as never spend time enough with a writer to become intimately acquainted with his spirit, but who pass hurriedly from flower to flower, merely sipping and nipping of the contents of books.... Nothing possesses so little usefulness as could be reaped in passing. The multiplicity of books only distracts the mind, and hence a person should be satisfied with the number of books that he can actually read, since it is impossible for one to read all the books he has. 'But I would like to open now this book then that.' This is the objection of a spoiled stomach that would taste of many different dishes, but whose very variety is more harmful than wholesome. Consequently, you should never tire of reading and rereading the classics, and if you are ever tempted to make an excursion into other fields, then return to the classics."

The school should heed this warning, and should strive to teach the young concentration and depth and to implant into them such strong and true interests that they will be immune from what is superficial and vacuous in the daily press. The teacher should, therefore, impart to his pupils elements of solid knowledge that will serve as apperception-masses in assimilating what is of value in the newspaper and magazine. But the school will itself be drawn into the vortex of the bustle and flurry of the daily press, unless it clings to what is tried and true, the eternal verities, and imbue all its work with the spirit of religion and morality.[1]

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classes of the most intelligent members of the different villages, and after having taught them what he knew, they taught others, and thus the knowledge of the new art was spread abroad.

[1] See *supra*, ch. XXXV, on the ethical concentration of the content of education.

CHAPTER LIX

The Sources of Informal Education

1. With all their differences, instruction and reading have in common the relationship that an imparting agency, the teacher or the book, stands over against a receiving agency, the pupil or the reader. But there are educative processes where the imparting and receiving are not so distributed, but alternate with each other; as is the case, for instance, in social intercourse, whether oral or written. All such educative processes belong entirely to the field of informal education, whereas the book belongs to it only partly, because it is extensively used also in regular and formal education.

Informal education is the first source of knowledge. The intercourse between mother and child gives the child a knowledge of the mother-tongue; and it is through the medium of speech and conversation that experiences, reminiscences, views, and evaluations are transmitted by the old generation to the new, and this is the beginning of the process of mental assimilation.[1] But the mutual intercourse of the children themselves is also a potent force in shaping their mental horizon. The boy learns much, good and bad, from his comrades; and the playground teaches him much that the teacher in the school never makes mention of. The school should not impede this process of informal education. It should, on the contrary, make liberal use of it for its own purpose, for the best way to imprint deeply on the mind what has been learned in the school, is to let it enter into the child's play; and that part of the educational content which spontaneously responds to the child's natural interests will most easily become his intellectual possession.[2] It is consequently advisable that the topics of the school should be the topics also of private and home discussion, for then the chords touched in school will be struck again and again, making, one may hope, an impression for life. What the old school saying, *rogare—tenere—docere*,[3] considered as the highest step in the assimilation of knowledge, is actually attained, if the pupils, even if only in sport, teach their younger brothers or playmates.

As conversation and intercourse thus supplement the regular work of the school, so they are, at least to some extent, its models also. Heuristic instruction employs the conversational form,

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[1] Vol. I, Introduction, I, 4. [2] *Supra*, ch. XLVI, 5. [3] Ch. XL, 3.

and will prove the more successful the more closely it approaches the stimulating and inspirational nature of the dialogue. Even after the school has completed its work, it is conversation and intellectual intercourse which keep alive the interest in science and culture. In this way we not only learn much, but are also stimulated to increase our store of knowledge. Hence it is not without good reason that the Germans call their encyclopedias *Konversationslexika*. The polymathy of the 17th century—intent, as it was, upon drawing on all sources of varied knowledge—undertook, in its *Ars conversandi* or *Homiletice erudita*, to supply material and give directions for conducting learned and cultured conversations.[1]

All such books are unavoidably dry and uninteresting. But the subject itself is important, and the history of education demonstrates that the free intercourse between different minds has deeply influenced more than once the whole educational system of a country. Among the Greeks the unconscious art of conversation, the διαλέγεσθαι, was the foundation of the conscious art developed by the sophists and Socrates. And this in turn, is the basis, on the one hand, of two forms of literary expression, the dialogue and the epistolary style, and, on the other hand, of dialectic as the method of research. The nature of dialectic is aptly defined by Schleiermacher as "the continuous comparison of individual acts of perception by means of speech, until an identical knowledge is acquired."[2]

These three elements, the dialogue, the epistolary style, and dialectic, are the cause of the wonderful development of the Greek language; and this language has furnished the Greeks

[1] Johann Adam Weber, Augustinian Provost at Salzburg, wrote an *Ars Conversandi* (Salzburg, 1682), in which the material for conversation is given under these twelve heads: *Gnomæ*, *Apophthegmata*, *Historiæ selectæ*, *Apologi*, *Symbola*, *Emblemata*, *Sales*, *Joci*, etc., *Narrationes rerum mirabilium et memorabilium*, *Observationes et quæstiones curiosæ*, *Dissertatio de rebus raris*, *Res eximiæ et celebres*, *Apparatus materiæ*. There are thirty rules given for conversation, and one of them says that the conversation should be *honesta*, *utilis*, *et fructuosa*, *non destituta hilaritate et jucunditate*. Morhof, the author of the *Polyhistor* (Vol. I, ch. XXII, 4) planned a *Homiletice erudita*, as we see from his *Polyhistor litterarius* (Lib. I, cap. 15). In his outline he followed the directions given in Aristotle's *Rhetoric* (II, 18 ff.), but considered self-knowledge of prime importance for the conversationalist. Morhof's rules are the following: *Honestatem vultu, verbo, facto exprime; Eruditi famam aucupare et esto; Viros magnos venerare, vivos et mortuos; Ostentator modestus esto; Defectus tuos absconde; Arcana tibi serva; Cave contemni; Ne sis molestus; Ut homo es, ita morem geras; Obsequiosus esto; Affabilis esto.*

[2] *Entwurf eines Systems der Sittenlehre*, edited by Schweizer, 1835, § 171 d.

with an educational instrument that is incomparably elastic and supple. That the Greeks considered social pleasures as closely connected with intellectual enjoyment and activity is evidenced by their frequently calling a philosophical dialogue a *Symposium*. In the same spirit Athenæus entitled his chief work, which is a storehouse of miscellaneous information, *The Dinner of the Learned* (δειπνοσοφισταί). The ancient practice was revived in the Renaissance, and learned conversations promoted the new learning. J. J. Burckhardt remarks of the Italian practice: "If we are to take the writers of dialogues literally, the loftiest problems of human existence were not excluded from the conversation of thinking men, and the production of noble thoughts was not, as was commonly the case in the North, the work of solitude, but of society."[1]

Thus it was that circles and societies were the first home of the new learning, and it was only later that Humanism retired to the privacy of the schoolroom and the closets of the learned.[2] Modern methods of publicity began to develop in the 17th century with Theophraste Renaudot as one of the pioneers.[3] Renaudot had been summoned to the French court by the Capuchin François Leclerc du Tremblay (better known as Père Joseph) to explain his theories on the alleviation of poverty, and in 1617 obtained the privilege of founding an intelligence bureau, where poor people might make known their needs, free of charge, and inquire as to places where work could be had, and where charitable people could learn the names of the deserving poor. In 1640 he began the practice of providing free consultations for the sick (our modern free clinic), by fifteen physicians and free visiting physicians. On May 30, 1631, he established a weekly, *La Gazette*, in which he defended the policy of Richelieu. About 1632 he inaugurated, in his intelligence bureau, weekly conferences, which in time developed into a "public academy of beaux esprits," whose proceedings were published regularly, and where "the young could obtain an education, the old refresh their memory, the savant find satisfaction in being admired, the unlettered be informed, and where all could find honest recreation." An allegorical picture illustrated this tendency: a woman was draped in a garment that was interwoven with tongues and ears, and Truth, standing beside her, was taking off the mask.

[1] *The Civilization of the Renaissance in Italy*, transl. by S. G. C. Middlemore, London, 1898, p. 383.

[2] Vol. I, ch. XXIII, 1 and ch. XXIV, 1.

[3] G. Bonnefort, *Un Oublié, Th. Renaudot*, Limoges, Ardant, 1900.

Cardinal Richelieu co-operated with Renaudot in all his various undertakings; and Anne of Austria, mother of Louis XIV, granted him the title of Historiographer to her Majesty. Renaudot's *conférences* were the forerunners of the French salons, which formed the characteristic feature of 18th century society.[1]

Though the literary societies and libraries and reading clubs of the present age may at times be overestimated and though they are open to abuse, still, if actuated by the right spirit, they are valuable aids to educating the masses. If the labor unions would give, like the "Gesellenvereine" of Germany, more attention to morality, religion, and general education, they might likewise prove of inestimable value in improving the conditions of the laboring classes.

2. The intellectual interchange that takes place in conversation and social intercourse, presupposes a certain community of opinions, knowledge, and experiences, without which intellectual communication is impossible. The matter which may serve to establish a common ground and points of contact is as rich and varied as the world itself, but the objects produced by artistic skill are particularly helpful in this respect. They are the products of intellectual activity and, like books, they embody and express thought. In stimulating the mind they also possess somewhat of the influence of what we hear and read. Painting, sculpture, and architecture are educative for young and old, the lettered and the unlettered. From the works of these arts the Greeks derived their sense—so widely spread among them—for the beautiful in space. With the majority of early Christians, works of art took the place of the Scriptures. "What the book does for readers," says Gregory the Great, "that the picture does for the unlettered, for in the picture they can see what they are to do, and from the picture they read what they can not read from books."[2] The Church has, therefore, remained the artschool of the common man, especially since she has called into her service, not only the painter and the sculptor, but also the musician, the orator, and the poet.

Popular art is an element of popular education that is often underestimated. "The peasants living in the mountains of Southern Germany," says Riehl, "are inferior in knowledge to

[1] Vol. I, ch. XXV, 3 and ch. XXVI, 3.

[2] Greg. M., *Ep.* IX, 9: "*Quod egentibus scriptura, hoc idiotis præstat pictura cernentibus, quia in ipsa etiam ignorantes vident, quod sequi debeant, in ipsa legunt, qui litteras nesciunt.*"

their countrymen of the North, but they possess an artistic sense and technical skill of which the Northerners have nothing. The painting of saints' pictures in the Bavarian and Tyrolese villages, the deft carvings in wood, the soulful songs that resound from field and wood, the straw-plaiting and watch-making of the Black Forest—it all is educational activity. It is one of the most serious of modern mistakes to evaluate popular education according to the percentage of encyclopedia articles that the common man has in his head."[1]

Poetry and music ennoble, inspire, and refresh the mind. They are combined in the folk song and in church music. As long as the drama was true to its original purpose (as in antiquity and in the Middle Ages) of assisting at public worship, it was an agency of culture and uplift, and ever since it fell from its former high estate, the noblest of the race have been bending their efforts to restore it to its former place of teacher and educator of the people. The influence of the arts will be the more potent, the more closely they are correlated with the interests of life; buildings and monuments mean more to the masses than museums and art galleries; and concerts mean less to them than the music performed on an occasion when their feelings are aroused. Yet there must needs be higher works of art, even if they convey little to the man on the street, for they serve the purpose of advancing and furthering the arts, and this advancement will in turn react favorably upon general education.

3. After the works of art, it is the thousand and one products of industry which belong to our cultural apparatus, and which, if carefully examined, will prove of educational value. They are one and all, like the works of art, products of thought, and can consequently again elicit thought. But the very commonness of these articles renders them mute, because we do not find time to question them, and few of us are conscious that our environment abounds in things that required long and weary hours to invent and make. "Even in the sciences we rarely find a full and satisfactory account of the thought-development involved in the making of a thing, and the world of thought represented by our environment lies in unmethodical confusion. Much thought is concealed in all the thousands of things and objects in whose company we grow from childhood into manhood and old age; and, like overrich heirs, we receive them without any

[1] Riehl, *Land und Leute*, 5th ed., 1861, p. 213.

labor on our part."[1] The dust of the commonplace settles on these wonders, and it is only when we are in the proper mood and when our curiosity has been aroused that we begin to unearth the treasures that are apparently so insignificant.

After the daily use has worn the novelty off the things we use and see day by day, we should strive to observe them in a new light, for instance, in a foreign country, as this will invariably bring out points hitherto overlooked. This factor is one of the special advantages of travelling, for in foreign countries we rarely meet anything altogether new, but we see the familiar in a new light, and being thus encouraged to compare our own with the new forms, we acquire a more definite knowledge of that with which familiar use had already acquainted us.[2]

The educational advantages of travelling have been recognized from time immemorial. Ulysses "visited the cities of many nations to become acquainted with their ways of thinking." Herodotus was eager for knowledge and "inquired everywhere about what had been done in the early days." The ancients made a practice of travelling for the twofold purpose of seeing the world and of studying under celebrated teachers. Isocrates gave this sound advice: "Let not the length of the journey discourage thee, when there is a question of receiving useful instruction, for it were assuredly a disgrace to have the merchants brave the high seas for the sake of material wealth, while our youths would not undertake even a journey by land for the sake of gaining intellectual culture." The Romans had to seek the higher learning in Athens, Rhodes, and Alexandria, and were thus obliged to make study trips.

Religious shrines and the universities were the objective points of most travelling in the Middle Ages. At this time travelling was also made a *conditio sine qua non*—the *Wanderjahre* — for attaining recognized standing in a mechanical or technical art. Travelling as education, however, received most attention in the Renaissance, when so many books appeared on educational travelling as to form a special department in literature.[3]

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[1] Bernstein, *Naturkräfte und Geisteswelten*, 1876. In his essay, *An Everyday Conversation*, the author enlarges upon the watch, the weekly market, and the mail service, in connection with the following conversation: "How late is it?" "A quarter to eight." "Then I shall go to market." "Will you please take along this letter and drop it into the mail box?"

[2] *Supra*, ch. XXVII, 2.

[3] Cf. Monroe's *Cyclopedia of Education*, s. v. *Travelling as Education*.

But travelling in the interests of science is a peculiar feature of our time, for we demand more in this respect than any previous age. The geographer, the archeologist, and, if possible, the historian must—such is the general opinion to-day—visit the countries of which they intend to write. Indeed, to visit the sites where history has been made, can not but prove advantageous to a man of culture. We have elsewhere remarked that travelling is a helpful factor in the training of teachers.[1]

The method adopted in teaching geography affects the benefits to be derived from travelling; and if home geography is properly distinguished from general geography, then the knowledge gained from travelling will assimilate more readily with the knowledge of home conditions.[2]

4. Both our home and the world at large are sources of education because of the wealth of man-made objects which they present to our eye and mind. But the fact that our home and the world at large include nature is another reason for their being sources of education. Nature offers many opportunities for informal education, and Comenius truly says, "For our instruction has God filled the great theatre of the natural world with the living characters of His wisdom."[3] Still we can not persuade ourselves to follow those educationists who blindly accept the view of Francis Bacon and speak of the living book of nature in contrast to the dead books of the past, as though the former were the only "school of realities, of things." Let the mind, on the contrary, withhold the interpretation, and the teachings of nature are unintelligible. The sense of nature or the feeling for nature is the fine flower, but not the root, of education and culture. The highest beauties of nature remain unperceived without the intermediary influence of art, and it is the function of philosophy and Faith to trace the wisdom of nature's workings. Thus nature is a source of education only with the aid of many and various agencies. This, however, does not mean that the pupil or teacher may ignore nature. We have before this stated that the health of the soul demands that the sensuous present occasionally take the place of living in the past—the latter is the common result of study and reading—and that the soul be refreshed and stimulated by communing with nature.[4]

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[1] *Supra*, ch. XLIX, 4.

[2] Ch. XXXVII, 2.

[3] *Did. magn.*, 19, 27.

[4] *Supra*, ch. XXVIII, 1.

5. Informal education has, if compared with regular and formal education, the advantage of being more free in its movement, more elastic, and more independent of outside influences. Its motive forces are not habit and duty, but spontaneous interest, eagerness for knowledge, and the desire innate in man to develop and perfect his faculties. However, in the case of the average man, possessing only moderate talents, the spontaneous and inborn interests will not stimulate him to any special exertions. But in the case of the very gifted pupil, these interests may be strong enough to inaugurate the process of self-development. The history of self-made men demonstrates that the truly gifted can blaze their own path to success without being driven along the highway of the school. Their course of mental development might at first blush seem to be truly organic, since it springs from the germ of individuality, which, growing both intensively and extensively, assimilates all homogeneous materials.[1] Still, their mental development will hardly be called ideal, when one realizes the faults—both moral (as conceit and self-opinionatedness) and intellectual (as one-sidedness of intellectual growth and great gaps in certain departments of knowledge)—which generally enter into the composition of such men as reached the goal of knowledge by other than the common avenues of the schools.[2]

It is a pleasure to note the power and energy displayed by these men, who scale the rungs of the ladder by dint of their own unaided efforts, prompted and sustained solely by the force of their own strong individuality. Yet, precisely because unaided, these men are handicapped and can never expect to reap the full benefits accessible to those who are so fortunate as to enjoy the complete and regular course of the schools. The educational results of the self-made man reveal strikingly the weakness of the individualistic tendency, which is prominent throughout their entire course of mental development. Nor is this defect counterbalanced by the organic development, especially since the latter is not restricted to their course of training. The regular education of the schools, if orientated according to the needs and end of man and if so adapted to the individual as to develop his faculties, will also affect the germ of his individuality and operate with his inmost powers.

[1] Aristotle praises, in his *Rhetoric* (I, 7, 33), the spontaneity and originality, *τὸ αὐτοφυές*, of the self-made man, and recalls the words of Phemios (*Odyss.*, 22, 347): *αὐτοδίδακτός εἰμι, Θεὸς δέ μοι ἐν φρεσὶν οἵμας παντοίας ἐνέθηκεν.*

[2] "The self-educated are marked by stubborn peculiarities," says Disraeli (*Literary Character*, ch. VI.).

CHAPTER LX

Varieties of Education and of Schools

1. The various agencies and sources of education are used by individuals in very different ways in keeping with the different aims that one can pursue in the educative process. We have, in chapters I.—VII., treated of these educational aims and ideals, but have not yet traced the various combinations that the different aims admit of. The educative process will differ according to whatsoever combination is made of the various aims. However, the ethico-religious ends should be included in every combination of educational aims. But if we join these ethico-religious ends with the intellectual-æsthetical aims, the kind of education that results is entirely different from the one that is inspired by a combination of the same ethico-religious ends with the indirect (practical) interests. These two kinds of education we may designate, *cum grano salis*, respectively by two terms handed down from the ancients: liberal education and illiberal education. One of the chief aims of liberal education is the pupil's inner formation, while the practical application of the educational content is one of the chief objects of illiberal education. Liberal education admits—as was observed in ch. III, 2—of living for learning's sake, while the chief concern of illiberal education is to learn for the sake of gaining a living.[1]

Liberal education may be subdivided into two kinds of education: if scholarly and scientific in content, it may be termed the scholar's education; but if concerned only with those elements of culture that are current among the upper classes, it may be termed the gentleman's education. The scholar's education deals with the past and is based upon the highest ideals; but the gentleman's education deals more with what is of the living present and with what promises immediate results. The former is more concerned with the basic sciences: philology, mathematics, philosophy; while the latter is more concerned with literature and the fine arts. The direct object of the former is the thorough development of the mind; whereas the latter has a scientific tendency and an inclination toward many sidedness. The former must guard chiefly against being out of touch

[1] Cf. J. H. Newman, *Idea of A University*, London, 1902, pp. 106-114, on the meaning of liberal and illiberal education.

with life and against becoming, in consequence, fossilized; while the latter must guard most against superficiality and slovenly methods of study.

The educative process that is chiefly practical in purpose is, in one respect, as varied as are the practical interests themselves. Still it may also be subdivided according to the degree of influence allowed to the understanding in guiding the work of practical application. The application may be performed with only a half consciousness, that is, in those cases where there is only a question of the *what;* or it may require full consciousness, that is, in those other cases where the *why* must be joined with the *what.* Hence the application may be purely mechanical, or may be only partly mechanical and partly intellectual. For the purely mechanical application of any knowledge or skill it is sufficient that the pupil be trained mechanically, but for the so-called "judicious"[1] application the educative process must deal with the reasons for acting in a certain way. In the first case the educative process may content itself with imparting general knowledge and skill and so much of practical instruction as is required for the particular profession chosen. But in the second case the course must include science, *i. e.*, a certain amount of applied science. The first kind of education is imparted in the elementary schools and in the training usually given to apprentices; and the second kind of education is imparted in technical and technological schools. Thus illiberal education also has two varieties: common education and technical education.

2. The relationship between these kinds of education has been different in the different periods of the history of education, and, to understand present conditions, it will be necessary to recall briefly what has previously been treated at greater length, *viz.*, in chapters X, XV, and XXX of Volume I, and in chapter VII of Volume II.

Among the ancients there was the strongest possible opposition between liberal and illiberal education, and only the former was considered as true education. To learn anything for the purpose of gain or profit or to fit oneself by studies for obtaining a livelihood, was considered as being unworthy of a freeman. The only education worthy of the freeman was that which was prompted either by the interest in knowledge for its own sake, or by the need felt for a refined occupation of one's

[1] After Kant, cf. *supra,* ch. XL, 6.

leisure, or by the longing for virtue; and it alone was termed παιδεία. Among the ancients there was no opposition between the education of the scholar and of the gentleman, for the ancient education was primarily a gentleman's education, and only in the course of time did it assimilate more and more elements of scientific learning.

Christianity modified the sharp contrast between elegant leisure and vocational activity, when it subordinated both to man's eternal interests. Christianity considers manual and professional training as not unworthy of any man, because it makes it subservient to man's highest end and aim, and therewith supplies an ideal element for illiberal education. Hence the common man, once he is imbued with the truths of Christianity, is no longer uneducated, for he has the beginning of inner formation and has that within him which truly idealizes education, though, in his case, the proper agencies may be lacking to perfect and correlate this ideal element with his intellectual life.[1] Thus we may truly say of the Christian nations that they have an illiberal education, which could not be said of the ancients without involving a *contradictio in adjecto*. And the public elementary schools of the Christian nations as well as their parochial schools are *educational* institutions; but this term would be a misnomer if applied to the elementary instruction of the ancients.

However, because of their derived culture, the Christian nations brought about a difference between the scholar's education and the gentleman's education. They must needs go back to the dead languages to obtain full possession of what is their own, and without the higher learning their intellectual and spiritual inheritance is denied to them.[2] Thus the liberal education of the early Middle Ages was coextensive with the higher learning; and it is significant that the term liberal (*artes liberales*) was associated with *liber*, the Latin for book. It was only after knighthood became a standing institution that the gentleman's education, based upon the study of living languages, poetry, and chivalrous arts, was recognized as supplementary to the scholar's education.[3]

In the Middle Ages elementary education was continued and specialized in the educational system of the guilds, so that we note here, for the first time, three kinds of education. But it was only the scholar's education—which had been the function, first, of the church schools, and, then of the universities—that

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[1] *Supra*, ch. IX, 5, at the end. [2] Ch. XX, 2. [3] Vol. I, ch. XVIII, 5.

was imparted in regular schools, while the parochial and sexton schools, the foundation of common education, did not yet assume definite shape.

3. The Renaissance firmly established the scholar's education by organizing the classical studies, and also graded this kind of education by separating the *gymnasium* (college) from the university. As the ancient classics seemed indispensable to higher education, a non-classical course was out of the question, and for fitting oneself for a higher profession the gymnasial course was a *conditio sine qua non*. It was only in the period of the Enlightenment that a non-classical secondary school was founded, but its aim was to provide, not a gentleman's education, but a technico-professional training. This new school became known as *Realschule*, and began as a branch of the Latin school and prepared especially for the mechanical professions. However, in its present-day form the *Realschule* tends to be more than a merely preparatory technical school.[1] Herbart regarded the *Realschule* as best adapted to educative instruction by reason of its being free from the long work of the classical studies—by the way, a grave underestimate of the educational value of the classics—and K. Mager likewise hailed it as the home of the "modern humanities," which would derive from the study of modern languages and literatures as much or almost as much cultural value as the *gymnasium* derives from the study of the ancient classics. The *Realschule* (its American counterpart is the non-classical high school) of the present unites liberal and illiberal studies, and its success depends upon the proper correlation of the two courses—a point that we shall soon discuss more fully.

Of the new kinds of schools founded in the 18th and 19th centuries, the girls' academies are of chief importance. These academies represent a type of secondary girls' school that offers a course consisting exclusively of modern subjects, which are taught with a view to their value as accomplishments. Thus the liberal element of the *Realschule* is the distinctive feature of the girls' academy. The large number of higher schools of applied science are preparatory schools for the mechanical professions, but represent no new type of educational institution. However, a new type has been created by the *Realgymnasium* (semi-classical school), which is a compromise between the *gymnasium* and the *Realschule*. There is, indeed, no such difference between

[1] See Monroe's *Cyclopedia of Education*, s. v. *Realschule*.

the scholar's education and the gentleman's education as to preclude their rapprochement. The historical elements of the former admit of the addition of the modern subjects, and the modern subjects on their part welcome the historical elements, especially the classics. The attitude towards Latin is responsible for the several varieties of the *Realschule;* some exclude Latin, while others require a more or less extensive study of it. Latin, however, should serve as the basis for the rational study of the modern languages, and a few years of Latin study are desirable even for such students as will not take up a learned profession. The institutions for the higher education of women should likewise include Latin in their curriculum, and this would prove an effective remedy against the superficiality to which their courses of instruction incline. Still the high school with even a four years' course in Latin is only preparatory to college, and for it to claim independence of, and equality with, the college is to ask us to expect a hybrid institution, such as the high school is with its intermixture of scientific and classical and modern studies, to be productive of the best educational results. To admit high school graduates to the graduate schools of the university will necessarily involve a lowering of university standards.

4. All kinds of education presuppose a certain amount of elementary knowledge, and consequently they all have as a common basis the primary school. The higher schools erect their own structure upon the basis of the elements taught in the primary school. The elementary instruction should always take into consideration for what kind of structure it will have to serve as foundation, and each kind of secondary school should have its particular kind of preparatory school. This is necessary for the sake of the continuity of the whole course as well as for correlating the educational content with the pupil's circle of thought and interest. Hence the preparatory school of the college should differ from the preparatory school of the technological institute, etc. This demand, however, though justified on didactic grounds, conflicts with the demand for a common people's school. The latter demand called forth the common school of to-day, and without that demand there would be no elementary instruction outside of that given in the elementary schools of special classes, *e.g.*, the rich, the poor, and the rural population, as is actually the case in England, where the common school system is unknown. It is obviously better to have a type of school which imparts to all alike the rudiments of

knowledge and the universally essential arts.[1] Though the common school system thus obviates the dangers attendant upon a system of widely different elementary schools, where some classes of the school population fail to obtain the necessary preparation for life, yet it should not destroy all social distinctions, but should build a foundation that is broad and strong enough to support its respective superstructure.

CHAPTER LXI

The Grading of Schools

1. Our brief sketch of the varieties of education and schools has disclosed a definite grading of the latter. The elementary school is the lowest. The second grade of schools comprises the following: the *gymnasium* (college), the *Realschule* (non-classical high school), and the higher girls' school. The third and highest grade comprises the schools of pure and applied science, *i.e.*, universities and technological schools. If we compare this grading with that outlined for the organization of the educational content,[2] we shall find that the elementary school corresponds to the child's school period, and that the secondary schools correspond to the three other age periods mentioned there: immature boyhood, mature boyhood, and mature youth. But the third grade of schools lies beyond the age periods treated in that chapter. Thus the question arises how the higher schools are to be adjusted, on the one hand, to the mental and physical development of the student and, on the other, to the educational content that they have to deal with. We shall turn to the history of education for the answer to this question.

In the higher studies of the Middle Ages the lower faculty of the liberal arts was distinct from the higher faculties, as is expressed in the familiar saying, "*Universitas fundatur in artibus.*" The special and regular preparation (in as far as it was given) for the *ordo artistarum* constituted the lowest grade of studies. During the Renaissance this lowest grade of studies developed into the Latin school, and the faculty of arts was converted into the faculty of philosophy. In principle it was still maintained that the Latin school, the faculty of philosophy, and the higher faculties should constitute three grades of schools;

[1] Vol. I, ch. XXX, 1. [2] Ch. XXXIX.

but the introduction into the philosophical faculty of matter other than philosophy, especially of the experimental sciences, brought this faculty continually closer to the higher faculties; and wherever mathematics and philosophy were not systematically separated off as propædeutic studies from the rest of the course, the actual results were two grades of higher studies instead of three. However, the loss of the middle grade was scarcely realized, because the Latin school had developed into the *gymnasium* (college), whose course led up to the university faculties, which were now considered of equal rank. Still the change involved a break in the sequence of what had been an excellent grading of the higher studies.

2. Educationists of widely divergent views have realized the need of repairing this break, and recommend that a course in philosophy, pursued either at the college or at the university, should complete the student's general education. Herbart styles philosophy "the true perfecter of education";[1] and remarks, "No *gymnasium* truly finishes the education of its students, and to do this is the function of the so-called faculty of philosophy."[2] "The faculty of philosophy," says Schleiermacher, "is the basis.... The real university is contained in the philosophical faculty, and the other three faculties are special schools.... Every university student should devote his whole first year to the study of philosophy.... He must first assimilate the general, else he will miss the essence of a university education."[3] Hermann Kern says: "The studies of the faculty of philosophy serve the purpose of general education and partly of professional training. But even in the general education courses of the university the students are left to their own resources with regard to the truly pedagogical co-operation of the various studies. The university does no more than offer an opportunity, in its school of philosophy proper, for finding the unity of the varied learning... This state of affairs should force the *gymnasium* to prepare its students for the university studies in such a way as will make them regard the university, not merely as a professional school, but as the perfecter of their general education."[4]

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[1] *A B C of Sense Perception*, translated by W. J. Eckoff, New York, 1896, p. 151.

[2] *Pädagogische Schriften*, edited by Willmann, I, p. 110.

[3] *Erziehungslehre*, edited by Platz, 1849, p. 564.

[4] *Grundriss der Pädagogik*, § 92.

Ziller recommends that the lyceum be introduced to prepare the graduates of the *gymnasium* for the professional schools of the university: "Because the general education, even as imparted in the classical schools, is not complete without a course in philosophy, it is obvious that the elements of philosophy, including logic, ethics, and metaphysics, should be mastered before taking up the professional studies."[1] Ziller suggests that the lyceums imitate the methods of the *gymnasium*, and thinks that the lyceum courses might well be given by the small universities, now struggling for existence; and he advises the student to arrange in the meantime, for want of something better, his own course in elementary philosophy.[2] Karl Peter arrives, on different grounds, at the conclusion that the first period of the classical course with its rigid forms of study should be succeeded by a second period, which, while paying more attention to the liberty and individuality of the students, would treat all subjects, except the ancient languages and mathematics, as electives. Peter would call only the second period of the classical course *gymnasium*, since he regards the first period as a preparatory school.[3]

3. If we consider the various opinions in the light of historical developments. we shall readily see how the connecting link between the college and the university can be recovered. The problem is to fit the college student for the professional schools of the university, which can be done by teaching philosophy systematically and thoroughly, employing exercises for the understanding and assimilation of its educative content; and this had best be done in the college itself.[4] Philosophy, as taught in the college, will by reason of its content have some relation to the university faculty of philosophy, but in method teaching it must be adapted to the age and mental development of college students, who may thus be prepared gradually for the greater liberty granted at the university.

The college course in philosophy should include, besides the elements of philosophy, the elements of physics and chemistry and a systematic study of religion. In the language classes the comparative study of ancient and modern literatures should be taken up, and frequent opportunities should be given for

[1] *Grundlegung*, § 4, p. 96.
[2] *Ibid.*, § 4, p. 96 and in the *Zeitschrift für exakte Philosophie*, IV, p. 17.
[3] *Ein Vorschlag zur Reform unserer Gymnasien*, 1874.
[4] Cf. Schwickerath, *Jesuit Education*, St. Louis, 1904, pp. 195 ff.

exercises in style. Mathematics should be studied chiefly with a view to its application to astronomy and natural philosophy. But to carry out this program of studies, we must have proper correlation between the different subjects as well as with what was previously learned, and—a very important point—the philosophical instruction must be correlated with the student's circle of thought—all of which requires other than university methods of teaching, as the regularity and discipline of school routine are obviously essential. Hence this program of studies may well fill out the last two years of the college course. And so we shall have the following grades of schools for secondary and higher education: classical high school—freshman and sophomore classes of the college—junior and senior classes of the college—university.[1]

[1] Willmann uses the following terms for these four grades of schools: "die gymnasiale Vorschule—die Lateinschule—das Lyzeum—die Universität."

II

THE SYSTEM OF EDUCATION FROM THE VIEWPOINT OF SOCIETY

CHAPTER LXII

The Transmission of Intellectual Treasures

1. The standpoint of the individual may suffice for obtaining a view of the system of schools, but it is only from the viewpoint of society that one can understand the essence and nature of the school. The individualistic view holds all schools to be created merely by necessity. It contends that each individual in need of an education should have his own teacher; but since the number of teachers is inadequate, one teacher is placed in charge of a number of pupils, so that the scarcity of teachers is ultimately responsible for the school system. In opposition to this view, it is necessary to emphasize the social character of education. Education is, indeed, the inner formation of the individual, but in its end and content it is the result of the co-operation of a union of forces. To be educated is to belong to the class of the educated. To acquire an education is to acquire a share of what is the common property of a class, and an education can, therefore, be acquired only through regular and systematic co-operation, though it is not confined to this co-operation. The numerical relation between teachers and pupils is an external occasion for opening schools, but by no means the principle of the matter. Aristotle's explanation of society, that it is created for the sake of life, but continues in existence for the sake of making life beautiful (*τοῦ εὖ ζῆν ἕνεκα*), may be applied to the school. The school is established in order to meet the needs of the many requiring instruction, but continues in existence for the sake of education, which is itself a phase of beautiful living. In both cases the demand is the first thing to be considered, while the institution that supplies the demand is considered in the second place only. But in point of fact and in accordance with the nature of education, the demand merely created the supply, and the character of the institution created by it is of primordial significance.

The school system resembles, from the social point of view, a system of interchange of intellectual treasures, which, with its lines ramifying over the length and breadth of a wide domain, controls the educative process and distributes its products in all directions.

2. But from the viewpoint of society, it is improper to designate the subject-matter of teaching as the sum-total of educational contents or of educational values; for from this standpoint the subject-matter of teaching appears as a whole of intellectual treasures.

Every treasure is made such by a conscious act of the appetitive faculty of the soul. This holds for material as well as for intellectual treasures. In the case of material treasures the object of the conscious act is a sensuous thing, but in the case of intellectual treasures the co-operation of the consciousness goes beyond the objects of the senses. A sensuous object may prove an intellectual treasure, but it must first be realized as a vehicle of something intellectual, before it can be considered an element of intellectual goodness. A book, a work of art, an instrument, a sacred shrine are intellectual treasures only after the consciousness has connected them with certain corresponding activities. All sensuous things are, in this respect, but signs, symbols, and reproduction helps. We can think of intellectual treasures only as connected with the activity of intellectual beings, who interact upon one another and place their impress upon the sensuous and thus give it an intellectual value. The achievements of science are void of life if there be no savants to interpret them to eager pupils. The works of art are a "caput mortuum" if there be none to enjoy them; and the sanctuary is consecrated only by the breath of the Spirit.[1] As long as we bear in mind the aforementioned difference between material and intellectual treasures, we can not but profit by the points in which they agree, without falling into the error of falsely treating the intellectual as a substance. This mistake would be no less serious than the other (to which the modern view inclines) of regarding the intellectual merely as a state of consciousness. The latter opinion is connected with the teachings of the Nominalists, who regard as intellectual only what the mind has made, but denied the intellectuality of what the mind, being naturally directed to it, has to receive only into consciousness.[2]

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[1] I. Cor., 3, 11.

[2] *Supra*, ch. X, 1 and 2; on Nominalism see *supra*, p. 194 and pp. 47 f.

3. The intellectual treasures may, in contradistinction to the material, be termed immaterial. But only a part of the immaterial treasures are, like the material goods, the products of time and natural forces. The intellectual treasures of language, literature, science, art, and industry are products of time and nature; but the spiritual treasures represented by religion are born of eternal and supernatural powers.

All intellectual treasures can be converted into educational values, but this is not essential to them, for originally they seem to oppose rather than to favor the educative process. Language, for example, the most elementary of the intellectual treasures, is created by the need of self-expression, and its use is as varied as human activity itself,[1] so that its service to education appears only as one of many services. The first products of the art of language co-operate with the beginnings of culture and civilization. They prepare the way for literature, which is one of the vital elements of every nation, and, connected with other national elements, it constitutes the national treasure of a nation, which treasure is much broader in scope than the educative process.

Religion, on the other hand, represents the supernatural element among the immaterial treasures of the race. The primary function of religion is to foster public worship. Before religion begins to organize an educational content, it builds churches, develops the forms and rites of public worship, and regulates life by precept and commandment; and some imperfect religions never get beyond these first stages. The primary motive in art is the desire for self-expression. Though the works of art must be understood to be enjoyed, yet of themselves they do not convey their deeper meaning. Buildings, monuments, museums, and art galleries are originally not intended for pedagogical purposes. The industrial and technical arts subject the forces of nature to the use and service of man. To accomplish this is their first purpose, and not how one individual can instruct another in subjugating nature. Even science, created by man's longing for truth, considers the discovery of truth to be its prime function. It creates institutions whose sole purpose is the search after truth, *viz.*, learned societies, academies of sciences, libraries, etc. The circles and associations which science establishes among its adherents, the largest of which is the republic of letters, foster learning, but do not apply or transmit it.

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[1] *Supra*, ch. XLIII, 2; cf. Vol. I, Introduction, I, 6.

4. While the intellectual treasures thus have originally no didactic tendency, they occasion, however, from the very beginning, much varied learning, and in this way they are converted into educational values and form the object, first, of informal education. The works of the poets are the source of education long before they are recognized in the schools as the standard texts. Poets and writers in general may be called the first producers in education, a term which has been applied wrongly to the elementary school teachers, as these are rather the retailers of educational values. The works of art likewise emit a continuous stream of influences upon all receptive souls that enter into their magic circle, and so the artist becomes unwittingly a teacher. Churches and religious objects exert a kindred influence: the mute glory of the cathedral has at times proved more eloquent than the preacher in the pulpit, and the metal-tongued bells carry upon the wings of the air a message that is universal in its appeal and intelligible to all. In fact, each and every object that is the product of mental activity becomes a vehicle for this very activity, for it represents and, as it were, binds thoughts and purposes that are again set free by being received into the intelligence of another person. The primary function of science is, indeed, not to teach, yet to communicate its results. It must, though born in the solitude of the mind, be verified by other minds, and it flows in a continuous stream, like the water gushing forth from the fountain, and, like the fire once kindled, so it supplies light and heat.[1]

In this spontaneous movement the intellectual treasures resemble current coins, which are continually changing hands and pass through all the lines and avenues, intricate and interwoven, of the country's trade. But if this calculation were the whole of the process, the intellectual treasures would lose their impress even sooner than our small coins; their results would become commonplace, and this would react harmfully upon their production. Whatever value the currency has must correspond to the reserve funds of the country, and the reserve funds of the intellectual treasures of the race are embodied in the faith, knowledge, and skill that are secured and fixed by tradition and teaching. The desire to transmit the greatest possible amount of property to one's children is the strongest motive for economical management, and something similar is true of the intellectual treasures. We give the treasures

[1] *Supra*, ch. I, 3 and Vol. I, ch. II, 2.

of civilization a fixed form so as to insure their transmission to succeeding generations. From the mass of the national literature the classics are selected and made the educational content of the language instruction. From the large field of the sciences the course of study is evolved, and the latter represents what is best and essential in the sciences, and these elements are transmitted to the young. The traditions of instruction are developed in the schools and react upon the educational content.

5. The production of the intellectual treasures and their transmission are now combined. The schools of art and of higher learning serve both the production and the transmission. An internal relationship is developed especially between research and teaching. The teaching assists the work of research. To express the results of research in a way that will appeal to students is somewhat of a test of the results themselves. To express publicly what we have discovered in the privacy of our study involves an objectivation of our ideas and will reveal new relations between them and thus make them an object of deeper study. Teaching is a process of giving and receiving. Mind meets mind, and mind reacts upon mind. The process stimulates, refreshes, and vitalizes the faculties; and a classs of students stimulated to mental activity affords the teacher no less profit in mental growth than the class receives from him. Though the old saying *Docendo discimus* applied originally to the young teacher only, it holds no less for the veteran in the profession. And its converse is equally true: *Discendo docemus*, for the teacher must, to teach properly, be himself a student; he must be intent on learning new truths, on acquiring new skill and on making general progress. The teacher must use science and learning, not as cold, lifeless objects, but as living, growing, self-renewing elements.

The transmission of the intellectual treasures to posterity, the assimilation of the young generation with the old, and the resultant reconstruction of the social body assure fixed forms to the educative process and a broad channel for the interchange and transmission of intellectual values. In contrast to this fixity and stability, the transmission of intellectual treasures by means other than teaching appears uncertain and irregular. These two methods of transmitting the intellectual treasures we shall for brevity's sake, designate as spontaneous and descendent respectively. But beside these methods there is a third which we shall call, in contrast to the descendent one, the collateral,

because it addresses itself, not to the young, but to the mature generation, to whom it imparts intentionally and more or less systematically much knowledge and skill. We have such a collateral transmission of intellectual treasures when the preacher addresses himself, not to young people, but, as in the beginning, to the "multitude which had come together."[1] Analogous to this transmission of knowledge is the popular treatment of scientific subjects that elicits the interest of the common people, and which, while deep and thorough, is live enough in tone to be stimulating. The arts may likewise be treated so as to appeal to broadly human tastes and interests. The propaganda made for certain tendencies in religion, art, or literature, and most of the activity of summer schools, correspondence courses, and university extension lectures belong to the collateral transmission of intellectual treasures.

In all these cases the transmission is confined to one larger social unit, but the transmission may also go beyond the one unit and affect another social body, and this constitutes the fourth and last kind of transmission of intellectual values. An instance of this would be the conversion of a whole nation to Christianity, or the grafting of a national civilization, or phases of it, on another nation. The relationship between teacher and taught, though on a large scale, still obtains here, and history is the guiding power.

6. The treasures which are transmitted by the educational system, are either such as must be conserved to the race because of a social duty, or such as are an ornament, or finally such as are prized for their usefulness. This division throws new light on the different kinds of education as well as on the educational contents. In chapter LX, we classified the varieties of education according to the combinations of educational aims, but we could also classify them according to the different combinations of intellectual treasures: unite the treasures whose conservation is a social duty with those that are ornamental, and you will have a liberal education; but unite the former with those treasures that are preëminently practical and useful, and you will have an illiberal education.

From the viewpoint of the transmission of the intellectual treasures, the educational content in general is articulated as follows. It is a social duty to conserve all those treasures which either must be made accessible to every member of the social

[1] Acts, II, 5-6.

body, or which must be represented in the function of the social body as a whole, though they can not belong to every individual. To the first class belong religion and all those treasures represented by what might be termed the inheritance of the nation: *viz.*, its spirit, history, and ideals. To the second class belong all those sciences that are of basic importance for the higher life—with us, therefore, the classical studies and philosophy with mathematics, its preparatory discipline—and thus we recognize here the basic sciences.[1] In one respect, we may say that it is the duty of society to conserve all the knowledge and skill acquired and to capitalize all the intellectual content acquired by the race, but in most cases this is done by depositing whatever is to be conserved with a certain class or profession. But in the case of those sciences that we have termed basic and whose cultivation determines the standard of all scientific work, this provision would be inadequate, and hence they must be cultivated to such an extent as to be a social factor. Consequently, the study of the ancient classics and of philosophy may not be confined to specialists, for they represent treasures which are of momentous, though unequal, importance for all classes of society, because they alone insure the unity and continuity of the development of science and, indirectly, of our whole culture.[2]

7. But a still broader range must be allowed to the religious and national elements, for they are the link between civilization and morality, consequently also between culture and civilization, and must, therefore, be transmitted to each and every member of the social body. They are the basis for the most general concepts of right and duty and social relations in general; and the extent to which these concepts are assimilated determines the degree of intellectual and moral strength to which education is to raise the individual.[3]

The accessory disciplines and the fine arts represent what is ornamental and desirable in the educational content. If the basic sciences supply the mental life of the race as a whole with the elements that make for solidity and thoroughness, then the accessory disciplines and the fine arts give it a tendency toward many-sidedness, which, rightly conceived, plays an important rôle in education.[4] Many-sidedness will result in many and varied points of contact, will lead us to understand and appreciate what our neighbors are doing, and will thus connect

[1] *Supra*, ch. XII.
[2] Ch. XX, 5 and ch. XXIV, 1.
[3] Vol. I, Introduction, I, 10.
[4] Ch. IX, 1.

the different individuals. Many-sided instruction will touch the mind at different points, and will, therefore, establish points of contact between the subject-matter of instruction and the different faculties; and by evoking the various powers of the individual it will secure their service for the whole course. In this way it opens up new sources of strength and enlarges the field of social usefulness, provided, of course, that the many-sidedness entail no loss in concentration and thoroughness.

There is no knowledge and no skill which might not be regarded as useful and which might not, because useful, inspire men with the desire to acquire it. Yet there are two groups of subjects that are particularly useful: on the one side are the arts (*Fertigkeiten*) most generally in use, namely, reading, writing, and arithmetic; and on the other are the applied sciences which must be pursued in training for the different professions. These two groups must be considered from the social viewpoint, for it is through them that education is correlated with economics; but in doing so we may not allow too much scope to the applied sciences, lest what is derived and special appear as the end of education instead of what is basic and of universal value.

CHAPTER LXIII

The Social Unions

1. We have found that the social unions are the agencies as well as the points of relationship in the transmission of the intellectual treasures; and we have already named a few of the social unions. We shall now show them as a whole and as interrelated with one another—a point which is the more important as the understanding of the social unions is essential to the understanding of the system of education.

In associating together men obey, like the brutes, the instincts of self-preservation and species-preservation. But men alone band together so as to constitute society, and the specifically human elements in society are, first, the subjection of the will to authority and, secondly, the accumulation of the intellectual work by the process of tradition. Authority assigns to every man his share in the common work of the community, and tradition makes him a historical being. Authority effects an organic association, and tradition is the basis of the sequence of heredity. The former assures a union of labor, the latter

assures its continuity (Th. Petermann). The former gives life a legal basis, the latter gives it a historical bedding.

Both authority and tradition presuppose liberty, for it is this which enables one not only to receive with the will whatever the authority demands but also to become self-active in intellectual work. But if the liberty degenerates into license, the foundations of society are endangered: men will rebel against legitimate authority and, being overwise, they will scorn tradition. The rebellion against authority will destroy the living unity of every association, and the conceit of the overwise will put an end to the continuity of life and work. Anarchy proclaims "the changing of all values," and attacks authority with its defiant cry: "All is permitted;" and with Nietzsche's phrase: "Nothing is true," it turns its back upon the treasures of knowledge hoarded up by tradition. The other battlecry of the anarchists: "Do what you please, seize what you can," denies the authority of law and the historical character of property.

Authority and tradition are the bonds that hold together the largest organism of society as well as its smallest tissue. When we arrive at them, we may be sure that we have arrived at the sociative elements; and thus they may show the analyst where to stop, lest he destroy the last living elements and dissect the seminulum. This mistake is made by all those who proceed from the individual and look upon society as an aggregate of individuals. They ought to recall the old adage: "*Unus homo nullus homo.*" The last element of the social body is not the individual, but the smallest social unit, the family.[1]

2. The family is the first of the social units and at the same time the prototype of all social unions. The social body is reconstructed in the family, and the stages of this reconstruction are the following: generation, rearing, education.[2] Only after the child has been assimilated with the family, does the process of its assimilation with the larger social unions begin. The family or the home is the first member of the following three series that show the structure of society: family, tribe, nation; home, native place, native country; family, parish, Church. Domestic economy deals with the domestic affairs of the State or of a household; and in the household we meet with the first division of labor in the interest of production, and this division foreshadows the different classes and professions in society. The father's authority is, in the eyes of the child, the prototype

[1] Aristotle, *Pol.*, I, 2; *Oec.*, I, 1. [2] Vol. I, Introduction, I, 2 and 7.

of authority in general, and all languages use the term father for designating those who are entitled to special respect. Corresponding to the threefold relationship which the family involves, *viz.*, between husband and wife,between parents and children, and between master and servants, Aristotle attributed a threefold authority to the head of the family: he governs the servants as master (δεσποτικῶς), the children as king (βασιλικῶς), and his wife as a magistrate (πολιτικῶς).[1]

Thus the principle of authority is brought out in the family in several ways. Still, the family has not body enough to be the basis of tradition. The agency that hands down the traditions must be broader and must be constituted of homogeneous, social materials. Language, which is at one and the same time the object, and the best vehicle of tradition is borne down the ages, not by the family, not even by the tribe, but by the people; and, similarly, manners and customs receive their fixed form only when they become broadly national. The transmission of faith, knowledge, and skill, even if carried on within the family circle, presupposes—except in the primitive age of the race—a community of life which includes and supports the family. This community of life is intermediate between the separate life of the family and the community constituted by the State. It is the home of the production as well as the transmission of all treasures, intellectual and material. It is the life of the nation in so far as it expresses and represents the national ideals and characteristics. But at the same time it signifies the social field in a narrow sense, because the production of the treasures results in the formation of the social groups, which by supplementing one another constitute society in the sense in which the latter is placed beside the State.

3. These groups unite individuals possessing similar or, at least, kindred desires, interests, and tendencies. But the groups themselves depend on one another because of their different positions and activities; and the more marked their difference the greater is the dependence of the agencies (representing the respective functions) upon the whole.

"Kit will to kind," is an old proverb. But it is no less true that differences supplement each other.[2] The relation between the parts of society suggested even in the earliest times the analogy of society to the living body, and it is only when the organic character of society is recognized that one realizes

[1] *Pol.*, I, 12.

[2] Aristotle, *Eth. Nic.*, VIII, 1 and 2.

also the condition that is indispensable to the preservation of the social body, which is no other than that each member should humbly rest satisfied with performing what is his work. The passing beyond one's sphere, the superficial dabbling in many fields, the wild hunt after wealth and honor, the measureless ambition, the envy of the more successful neighbor—these will, if allowed to run their course, eventually disintegrate society, so that each individual will be following his own selfish bent, while only the force of necessity will preserve a semblance of co-operation.

The demand that each individual do his share of work, presupposes that he be at home in his work, *i.e.*, possess the necessary amount of knowledge and skill. Hence society must insist on special ability and vocational activity. The further demand that each man be content with his individual sphere raises another issue: a man can not content himself with his lot unless he have an understanding of the whole and realize clearly that what constitutes his immediate aim is but a small portion of the sum-total of the treasures of the race, for beside the material treasures there are the intellectual, and over and above all temporal goods and treasures are the eternal and religious boons. Among the great variety of callings we can distinguish two main classes: the first devotes itself to the pursuit of the immaterial treasures; and the second, to the pursuit of the material. Hence we have the teaching class and the working class. These two classes flow from the nature of society itself, while other classes are the result either of higher social unions or, as in the case of the nobility and the common people, of historical development.

4. Society can not exist without material goods. But the intellectual treasures modify and control the development of society. The spiritual treasures, which proceed from the supernatural, are the core of the immaterial treasures. There is no form of religious belief but has, by reason of the revelation granted to the First Parents, such a supernatural starting-point. But the threads that extend from that point are in the natural religions interwoven with social, national, and local elements. This circumstance accounts for the incongruity that the supernatural treasures, which should be transmitted by the whole race as such, are intermingled with the elements of one nation and subject, therefore, to successive changes. That one nation should preserve intact these supernatural treasures, was possible with the Chosen People alone, for here the supernatural impulses not only continued to be active, but were continually

renewed. It was solely through this supernatural intervention that the Jews preserved inviolate the treasures of religion until the "Fullness of Time," when they were committed to the hands of a divinely organized institution: the Church.

In Christian society the Church represents the spiritual treasures, and her clergy constitute a special profession and one that belongs to the teaching class. The Church shares the organic character with society and expresses this character most perfectly: "There are diversities of graces, but the one Spirit; and there are diversities of ministries, but the one Lord; and there are diversities of operations, but the one God, who worketh all in all."[1] No other social union can compare with the Church in respect to the influence exerted by her central principle. In society, for instance, there are different principles at work; and in the smaller social unions the effects from within are frequently thwarted by the effects from without. The State, too, presupposes the community of life, and the principle of the State takes definite shape only after it has become operative. The Church, however, forms and shapes herself in all points from within and from the head downwards. She assimilates elements of all kinds, and uses them either as building materials or as building forces, and does all this according to the preordained ends and the ground plans as sketched by her divine Founder. Hence the Church is a "*societas perfecta*" and the social organization that brings out most perfectly the nature of society. The Church demonstrated her power for organization when she placed the decomposing society of antiquity upon new foundations; and again in the Middle Ages, when she set free the social forces of the barbarian nations and trained them to law and order; and she will again show her ancient strength and will again be a saviour and an organizer when the destructive forces, active in modern society, will have done away with the palliative cures—from which shortsighted men still expect salvation—as well as with the impotent hybrids of negation and height of place, of anarchy and the all-powerful State.

5. A community of life that included only families, a nationality, and society would, indeed, call forth certain human activities, but could assure neither to their results nor to itself any degree of permanency. To obtain permanency, it is necessary that the will of a great number be united so as to present a strong front for defence as well as a strong force for action;

[1] I. Cor., XII, 4-6.

and the institution that embodies this collective will is the State. A people lacking statehood resembles the organisms of vegetative life, while the independent State has the strength and the free movement that is characteristic of the animal organism. The State is a product of history, and gives the respective people a place in history. Though a dependent people may love its country, it will never glow with the pride that the people of an independent State, rich in a glorious past, can feel. The State, however, must be endowed with the authority to concentrate the will of the many and to defend the country as well as to take the initiative in national affairs. The authority is the more evident here, since its rigor is not softened, as in the family, by other relations. Indeed, the functioning of the political organism depends on the proper interrelation between the commanding and the obeying (ἄρχειν and ἄρχεσθαι). The State, however, is in need also of traditions, and that not only in respect to government maxims and political principles, for the concept of the State is incomplete without a whole sphere of views, memories, and evaluations. Furthermore, a language is required to express these traditions and to formulate the laws for the body politic.

The State, too, is largely governed by its end; but with it the end does not operate in so pure a form as with the Church, for the State derives most (itself producing only a small portion) of the intellectual content required from the community of life out of which it develops. Though the State is independent of the nation, it still needs the latter's assistance in the first stages of its growth. The military profession and the body of civil officers are established to meet the needs of the State and constitute distinct social classes.

It is the tendency of the State to fix the community of life. Out of the order and habits of life, established by custom and natural law, it establishes the legal system. This legal system supplements the social order in as far as it adds to the principle of the latter, "Let each man do his duty," this further principle, "Let each man possess his own;" and by determining the rights and duties of all it prevents the stronger from taking advantage of the weaker. Justice must guide the State in regulating the community of life. Justice is the foundation of all governments, and St. Augustine was right in saying that a government without justice is naught but a great band of robbers.[1]

[1] *De civitate Dei*, IV, 4: "*Remota justitia quid sunt regna nisi magna latrocinia? quia et latrocinia quid sunt nisi parva regna?*"

6. With a healthy development the legal system is only the expression of the general consciousness of what is right. The living custom is intermediate between the legal system and the individual life; and, similarly, social organisms of various kinds occupy a middle position between the State and the individual. The State, if wise, will incorporate into its own organism these units representative of the community of life, whitout, however, depriving them of their specific activity. It is a shallow view that recognizes only the one contrast between the State and the individual; and a legal system based on this view will scrupulously and jealously define the limits of the public and private fields.

The State is a powerful factor in life. It has great ends and great resources. It exerts a deep influence upon the life of the individual and shapes, to a large extent, the forms of the community of life. Only independent nations can play a rôle in history, and the nations possessed of special political gifts have ever been the leaders of the world. It is not surprising, therefore, that ancient thinkers regarded the State as being man on a large scale, and that modern thinkers designate it as "the realization of the moral idea" and "God's course in history" (Hegel), and that not a few schools of law declare it to be the source of all right and the highest authority in everything.

Yet history must warn us against regarding the State as the highest social organism. The ancient State culminated in the Empire that subjugated the civilized world, and then turned about and worshipped the Cæsars. It was left to the Church to found a family of States, which, with all their differences and conflicts, had in common the forms of religious worship. And the Church alone can supply the basis for a brotherhood of independent nations and a system of international law. The Church assists the State in the work of morality, but reminds it withal that society is the complement of the State. Grant the Church her proper place, and the relation between the State and society will also be satisfactory. The Church preserved the organization of medieval society, and the principle of her Canon Law corresponds admirably to the Germanic tendency toward social grouping. But the secularization of the Church introduces the system of politics which identifies all community of life with the State.

The Church is the depository of authority and tradition. Society may, when pursuing a phantom of liberty, reject the claims of authority, and the State may, in an exaggerated notion of its own prerogatives, override tradition. But the Church

has both formative forces joined in an inner union and she can not be deprived of them. She consecrates all tradition and derives all authority from its last divine cause.

CHAPTER LXIV

The Social Unions as Representatives of the System of Education

1. For characterizing the social unions we had to select such of their functions as are peculiar to each, and thus we found the distinctive function of the family to be the reconstruction of life; of society, the reproduction of temporal goods; of the Church, the administration of the religious treasures; and of the State, the protection and safeguarding of rights. But beside these functions there are others, common either to several or to all social unions. Thus the State and the Church join hands in upholding public morals, and the State and society co-operate in the production and transmission of material goods and intellectual treasures. All social unions exert a certain disciplinary influence by reason of the close connection between discipline and authority. And because of the connection between tradition and teaching they are related to the educative process. Both the family and society educate, and the State and the Church have educational systems of their own. Hence the social unions are the constituent factors or the representatives of the system of education; and the system of education depends in its fully developed form on their mutual co-operation; and its dependence is such that the successive entrance of the different factors into the co-operation marks the successive stages of development in the system of education.

The function of the family is the reconstruction of life. Its task consists in engendering, rearing, and educating. It imparts to the child the first gifts of society, and among these are the first elements of education. What the family can offer to the child, is in extent less than the gifts of the larger social unions, but it makes up for this defect by the kindliness of spirit with which it provides for its members, and which is like the humid warmth that causes the seed in the ground to germinate and spring open.

In the East we find interesting examples of courses of instruction that are confined to the family circle. Such were

among the Israelites the instruction of the young in the Law[1] and among the Chaldeans the method, so much admired by the Greeks, of transmitting knowledge solely by having the father instruct his boys from their earliest years.[2] In India the *Veda* instruction is even to-day confined to the family circle, and the students are admitted into the teacher's family and are treated more like apprentices than like pupils.[3] This family instruction is, beside the caste system, the distinctive feature of the eastern educational systems, which are the oldest known to us. But we find that the family co-operated also in later ages with the educational work of the schools. Thus the needs of home instruction prompted Cato to translate and adapt the educational writings of the Greeks, and Cicero dedicated his work *Of Duties* to his son. The earlier Roman orators were praised for having learned the first principles of their art at their mother's knee. As late as the eighteenth century rural pastors frequently fitted their sons for the university examinations. In the case of girls, though not in the case of boys, the home may still take the place of the school. The whole system of apprenticeship was originally confined to the family circle, the apprentice living under his master's roof; and agriculture is still universally taught by the parents to their children.

When the school undertakes the work of education, the family has still an important function. The family must not only attend to the moral and religious formation, but is also better able than any other agency to assist in other educational functions. For example, the family can best meet the spontaneous impulses toward knowledge and self-expression. Thus we often read in biographies, that the stories of parents, the pictures in the home, the father's library, etc., educed latent talents, and that the home influence remained a stimulating force throughout life. The family is, furthermore, the natural representative of the intellectual-æsthetical elements. It is within the family circle that the harmonious formation of the inner nature can be best accomplished, that all the interests can be harmonized, and the talents of the individual can be best adjusted to the many-sided influences. It is plain that the school can not allow sufficient scope for the pupil's individuality; and the social intercourse, on the other hand, presupposes the individuality to be an accomplished fact. There is, then, no other educational or social factor that can adequately replace the life

[1] Vol. I, ch. VII, 1. [2] Vol. I, ch. VI, 1. [3] Vol. I, ch. IV, 4.

in a cultured home. The latter alone gives resonance to what the school offers, and it alone permits the free continuation of the impulses received. The life in a cultured home creates interests and suggests questions. All these results are an aid to education and of no less imporatance than that control of diligence which is justly the school's first demand of the home. The school may overburden the pupils with home lessons to such an extent as to force them to spend most of their time at home on their books. But this practice impedes the pupils' mental growth and may be likened to the folly of an engineer, who, while building a water system, covers up springs and fountainheads.

2. The educational activities of the family and of society are interrelated in many ways. Home instruction, if imparted by a professional teacher, is a social function; and though the apprentices were formerly members of their master's household, yet this system of training was ever social in nature. Society creates the teaching profession and a teaching class, and in this way the educative process is placed into the midst of the common life, and the treasures of the latter are made accessible to all. The educational system of the ancients was essentially social, and the Roman schools were the first to receive state aid. Where the caste system obtained, the arts, sciences, and trades were transmitted within certain classes only, and were restricted at times even to certain families.[1] With the Greeks and Romans education, being denied to slaves, was also a matter of classes. The Roman *collegia*, which represented a sort of guild, were the beginning of a system of training for the mechanical professions. Among the ancients the teaching profession confined itself at first to elementary instruction, while the higher learning was represented by savants and philosophers, who scorned the idea of being paid for teaching. The philosophy schools did not train for any profession, but were the outcome of social conditions and were jealous of state interference.[2] Only after the time of Alexander the Great did kings and princes begin to found societies of savants and philosophers.

The social educational system flourished most in the Middle Ages, for it was then that the training of the clergy and (the Church co-operating) chivalrous, industrial, and vocational education assumed fixed forms. The training system of the guilds and the town schools are such forms. But more important and more distinctive are the universities, the greatest achievement

[1] Vol. I, ch. V, 4. [2] Vol. I, ch. XI, 2.

of the Middle Ages. The medieval universities embodied all social elements. Originally, they were training schools for the clergy, and through their faculties of theology they remained connected with the Church. They furthermore established the aristocracy of learning beside that of knighthood, and in their corporate organization they were modelled after the citizens' trade guilds.[1] The medieval universities led the way in establishing a teaching profession both possessed of special privileges (particularly autonomy) and organized in as far as the *studium generale* was connected with secondary schools. The same influence is responsible for the grading of teachers.[2]

The social element of the educative process must, like the family element, be preserved, even after the higher social factors have begun their activity. The social element as well as the family element individualizes the educative process. Consequently a school that draws its pupils from all strata of society and that undertakes to fit for different professions, will lack essential helps that are at the command of a school with socially homogeneous pupils, where the social horizon is the same, and where the kindred interests in the future permit the course of study to be adjusted to definite conditions. To adjust the curriculum to future professional work is not necessarily illiberal, but may serve as a leaven for stimulating the educative process.[3] The educational system as a whole will only gain by being correlated with society. It will but profit by remaining in touch with the broad interests of human life, provided that fixed, constitutive principles prevent a one-sided solution of the equation of school and life. It is well if the members of the teaching profession can band together so as to establish a special class; and this is especially desirable when the variety of schools produces various classes of teachers instead of one class.

3. The teaching system of the Church supplements the educational system of society. It recalls the hieratic teaching of the Oriental peoples. Every system of religious belief will produce a priestly wisdom and a corresponding didactic content

[1] Vol. I, ch. XVIII, 7.

[2] Denifle's learned researches (*Die Universitäten des Mittelalters*, I, 1885) has thrown new light on the origin of the universities. He has proved that most universities were entirely new creations, and that but few were outgrowths of older schools (l. c., p. 728). Of 44 universities, founded before 1400, 9 arose spontaneously, *i.e.*, without any charter, 16 had papal charters, 10 were chartered by secular rulers, and 9 founded jointly by ecclesiastical and secular authorities.

[3] *Supra*, ch. II, 2 and ch. VI, 2.

that will be highly esteemed. To preserve and transmit this content is the function of the teaching system. But in the case of the natural religions the religious teachings will be intermixed with other matters, social, national, or purely local. The Church, however, who is the custodian of the eternal truths of Redemption and Revelation, wards off these deteriorating foreign elements. She takes her position outside of society and creates her own common life and a special order, which are typical respectively of the common life of the race and the supernatural order. The Church's starting-point is an aim; her nature is a thought, an end, an office; and thus her teaching office is also the starting-point for her teaching activity, and her teaching office constitutes together with her priestly office of administering the means of salvation and her pastoral office, the sum-total of her functions. By virtue of her teaching office, the Church instructs young and old in the Christian truths, preaches missions and sermons, gives school instructions, in short, carries on a general teaching activity such as was unknown in pre-Christian times.

And thus the education of the Christian priest is essentially different from the training that the priests received among the nations with the caste system. The Christian priest must be trained for the teaching office; and the earliest Christian schools were called catechetical schools and were, therefore, training schools for teachers as well as schools of theology. The peculiar development of its teaching content is likewise characteristic of the Christian religion, founded, as it is, on the combination of the active and the contemplative life. With the hieratic peoples the idea of contemplation was either not developed at all or was, as in India (where contemplation is the end of the *Veda*)[1], entirely separate from the active religious life. But in the Christian religion we find the contemplative as well as the active life; witness the contemplative religious orders and the clergy that have the cure of souls. It was amid the peace and stillness of monasteries that the art, science, and teaching content of Christianity were developed and that the traditions of instruction became fixed.

The teaching system of the Church is an organism that depends in no way on secular education. It has, on the contrary, deeply influenced secular education and has, as is seen from the history of education, supplied it even with constitutive elements. The Church has, one may say, laid two foundation stones for

[1] Vol. I, ch. IV, 5.

the educational system of Europe: the theological training school and the parochial school. The theological training school was the support of the schools of higher learning, and the parochial school has become the foundation of the common school system. The intermediate types of schools are secular foundations; but the Church has co-operated in their development. On the one hand, she made it possible to carry out the ground-plan by the homogeneity of the spiritual life which she introduced, and which assisted in evolving the varieties of the common life without, however, producing an unsettled state of society. On the other hand, she served both as a type and as a support for the educational system of society. The universities assumed their final and definite form only after they admitted theology and the liberal arts courses that were traditionally connected with theology; and the university faculties borrowed from the monasteries the terms *ordines* and *decani* as well as the community life of the masters and scholastics. The beginnings of the *gymnasiums* and colleges can be traced to the colleges founded in most cases by monasteries.[1]

Even the social standing of the teaching profession is due, in great part, to the educational activity of the Church, for she was the first to give attention to the systematic training of teachers; and her work in founding larger and more firmly established schools than had been known in antiquity, called for larger teaching bodies—a *conditio sine qua non* for class-consciousness. Despite her tendency toward the whole, the Church does not neglect the individual, and in this respect she resembles the family, and seems, in fact, to be fond of being termed a family. But the family cares for the individual only, and so its work must be supplemented by the activity of the State, which, however, cares only for the public weal. The Church's interest in the whole, is on the contrary, premeated with, and inspired by, her solicitous love for her individual children, and she cares for the individual because of his being a member of the invisible body constituted by the whole.[2]

4. The educational activity of society is various, but is governed by special interests, and the educational institutions which it establishes are consequently lacking in perfect unity. The teaching system of the Church, however, is compact and represents universal interests, but still only in so far as these are connected with her work of saving souls. Therefore it re-

[1] Vol. I, ch. XVIII, 8. [2] Vol. I, Introduction, II, 8.

mains the duty of the State and of the social unions included in it to regulate education according to the universal interests as they affect the different forms of the common life.

The history of education shows the State as at first merely fostering and continuing the work of existing schools. The Roman emperors conferred citizenship and other privileges on teachers, granted them a salary to be paid by the State, and controlled the founding of new schools.[1] The Christian rulers of the Middle Ages assisted the Church in founding cathedral and parish schools, and endowed the universities with privileges. The school regulations of the 16th century did not go beyond the ecclesiastical system of schools. Even when the State founded new schools, it did not originate any new type, but patterned them after the social or ecclesiastical institutions already in existence. For instance, the imperial schools of ancient Rome were imitations in part of the rhetor's and in part of the philosophers' schools. The palace schools of the Middle Ages adopted the organization and methods of the monastic and cathedral schools. The universities founded by secular authority were modelled after the existing *studia generalia*. The state and city schools of the 16th and 17th centuries were not the realization of any new educational idea, but only variants of the Humanistic schools.

However, in the 18th century the State approached the system of education with special maxims and from new viewpoints. The State recognized the need of popular education from the viewpoint of political economy; that is, it realized that education was necessary in order to make the citizenry more efficient and more productive.[2] But this narrow conception was later correlated by the substitution of broadly national motives.[3] In this way was the foundation laid for the common school system, which, though modelled in its first stages after the parish school system, may nevertheless be called a new foundation, since it brought about the establishment of a uniform course of study and prepared the way for a new tendency in pedagogy.

With the establishment of the common school system the State assumed the office of ministering to general interests; and in supplementing the educational activity of society it created institutions such as would have been impossible had special interests, particularly of the rural population, been allowed sole sway. The state governments followed a wise policy when they

[1] Vol. I, ch. XIV, 3. [2] Vol. I, ch. XXVII, 4. [3] Vol. I, ch. XXX, 1.

legislated, in the beginning of the 18th century, concerning the higher schools, for their prudent conservatism preserved the classical studies from the onslaughts of the then prevailing opposition against Greek and Latin. In thus preserving these educational treasures the State rendered even greater service than by its new foundations in the field of technical and industrial training.[1]

The various legal relations that arise in connection with the educative process call for state control. The various social factors co-operating in education will inevitably result in complications, and these must be regulated by law. Thus the supervision of schools, the paying of school taxes, the relations between public and private schools, etc., must be controlled by law. Other legal questions deal with the status of teachers: their training, examination, supervision, pensioning—and all these matters are subject to state laws.

A third field subject to state control is the question concerning the subject-matter of examinations and concerning the demands to be made on the graduates of various schools. If the educational system be purely social, the different professions will determine by their content the conditions on which a candidate is admitted to practice. But institutions for general culture would miss their chief function of raising the pupils to a certain level of mental ability, if they confined themselves to vocational training. Thus the vocational school and the school of general culture would seem to be opposed to each other, a fact that renders orientation in educational matters especially difficult. The State removes this difficulty by standardizing the different schools, *i.e.*, their subject-matter of instruction and their examinations. This policy is strikingly effective, if, as is the case in Europe, special social privileges are enjoyed by those who pass the state examinations. In this way the schools conform to fixed standards and their graduates are assured of certain rewards; and these circumstances will assist the individual in choosing a calling and will assure the professions themselves of a homogeneous increase. Yet this arrangement is open to the danger of establishing purely external results as the standards for evaluating educational work, and thus the bread-and-butter value, which ought to be of secondary importance, is made of primary significance.

The many services that the modern State renders to education should not warp our judgment so as to give the State

[1] Vol. I, ch. XXVII, 6.

more than its just due. The schools are not institutions of the State, and the State did not originate the educative process. It has only continued the work that the schools and other educational agencies had begun. The State is not the educator of the people, but the administrator of the educational capital that belongs to the people.[1]

CHAPTER LXV

The Social Unions as Related to the Educative Process

1. All social unions co-operate, as we showed in the preceding chapter, in creating the system of education, and hence the latter does not belong to any one of them exclusively. It is not subordinate, but rather co-ordinate with them. In its sphere of activity the system of education is as broad as the social unions. Moreover, by virtue of the variety and extent of its institutions, especially by virtue of the elasticity of informal education, the system of education affects all social forces and unions and holds them permanently, at least to some degree, under its influence. This universal tendency establishes a closer relationship between the system of education and the Church and the State (which appeal to all and demand the service of the whole man) than connects the latter two with any social institution directed to some special end, as the judiciary, the army, etc.

It is, therefore, not unusual to class together State, Church, and School. We have in mind the same classification whenever we speak of the Greeks as having been with the Romans and Israelites the teachers and spiritual fathers of modern civilized peoples.[2] It was a common saying in the middle Ages that Italy had the chair of St. Peter; Germany, the throne of the Emperor; and France, the cathedral of learning (University of Paris). Philosophers, too, have grouped together State, Church, and Schools, understanding the last term as comprising all institutions and agencies serving in any intellectual capacity whatsoever. Thus Schleiermacher speaks of the school (here used in the narrow sense), the university, and the academy of sciences as constituting a third ethical organism beside the organisms of law and religion.[3]

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[1] Vol. I, ch. XXVIII, 3.

[2] Cf. J. H. Newman, *Grammar of Assent*, London, 1909, p. 433.

[3] Vol. I, Introduction, IV, 3.

The enemies of the Church use this grouping in their attacks on the Church when they tell us that the Church, the State, and the School are the three agencies whose function is the education of the race, and that education should consequently not be subject to the Church, and that the School should likewise be independent of her. It is easy to recognize the fallacy in this argument: it is founded on a *quaternio terminorum*, for the term education is used in two different meanings, first in the sense of moral improvement, and secondly, in the sense of training of the young. The former, *i.e.*, moral improvement, is, no doubt, the mission of the Church, but just on this account must her voice be heard also when determining the training of the young. If you admit that the Church has the right and the duty to work for the moral improvement of men, you must allow her to assist also in training our young people.

But Church, State, and School can not be classed together at all, if this grouping is to imply that the School is coextensive with the Church or the State. When saying that each of these three has a mission, we must bear in mind that the term mission has in each case a different significance. The State has a mission, indeed, but only in the sense of "potestas," *viz.*, its legitimate authority. But the Church has a mission in the true and original meaning of the term: she has a κλῆσις, a *vocatio;* she has been sent by God to carry out His work among men; she has a divine mission.

However, both the State and the Church are by virtue of their mission the representatives of authority. But the School has nothing analogous to this . Its mission is to transmit the intellectual treasures of the race, and thereby to assist in the intellectual reconstruction of the social body. But neither the production nor the administration of the intellectual treasures is the function of the School. Its authority is confined to its own organs and to the pupils committed to its care, and its authority is derived from the God-given authority of the Church and the State. In this respect the School is, notwithstanding its universal extent, on the same level with the following series of other organs of the social body: the organ which produces the material goods, *i.e.*, the trades and industries: the organ which controls the interchange of material goods, *i.e.*, finance and traffic; the organ of the common will of the State, *i.e.*, the administration of the State; the organ which protects persons and things, *i.e.*, the judiciary; and, lastly, the organ which protects the social body from external and internal dangers, *i.e.*, the military.

2. We have proved, in ch. LXII, that the system of education must transmit knowledge and skill. But we shall now take up a subject that has hitherto been but touched upon: how education assists in the reconstructive process of the social body. This process is founded on the fact, common to the social as well as the animal organism, that there is a continuous discharge and reception of the constituent elements. Births and deaths represent this process in the social body. There is, first of all, a physical reconstruction, to which the intellectual reconstruction is added later. The process of engendering gives life to the children who are to reconstruct society by taking the place of those who die and pass from the scene. The process of rearing preserves their lives, and education performs the work of their moral assimilation. The processes of generation, rearing, and education belong to the family, which also begins the intellectual assimilation to be continued later by the school.[1] At first the school assimilates the child with the common life as such, without preparing him for any special calling. From the school the pupil passes either directly to his life work, where the practical training takes the place of study, or he goes to vocational schools to prepare for a particular line of work.

The reconstruction of the social body is not the same in all departments of society, as the preparation for the various trades and professions does not require the same amount of regular study and practice. For training young farmers it is sufficient to let them work on a farm with an experienced farmer. Regular shop training is required for learning a trade, but this training presupposes the general education imparted in the elementary school. Training in an industrial or technological school is required for the mechanical professions. In preparing for the military or the commercial profession the vocational practice should likewise be preceded by vocational studies, and the latter must again be based on a general education. In preparing for the teaching profession or civil service the elements of science should be first taken up, then the study of pure and applied science, and only after this should the candidates be admitted to practice. The education imparted by the university, the home of the pure as well as the applied sciences, is superior to all technical training, because it substitutes the direct interests of study for the indirect, even if only for a time. The university teaches the student to acquire knowledge for its

[1] Vol. I, Introduction, I, 3 ff.

own sake, and it is only from this point of view that true mental work can be enjoyed.

It is interesting to trace with the aid of statistics the process of the reconstruction of the social body. The material, however, is unfortunately inadequate to obtain a full view of the subject, as statisticians have as yet given little attention to this phase of their science.[1] Still we have statistical data enough to indicate approximately for the successive years the numerical status of the persons born in the same year. One-fourth die during their first year, and only one half of the boys are still living after about 14 years, while of the girls one half are dead after about 20 years. After 60 years only one-fourth are still among the living, and after 90 years only about one two-hundredth. This relation can be visualized by making a drawing either to resemble the trunk of a tree without the branches, which tapers from a broad base to a fine point, or to resemble a bell with a wide rim. To make the drawing let a horizontal axis represent the number of individuals born in the same year, the number of the boys being placed on the right side and the number of the girls on the left, and let the years be marked on a vertical axis drawn from the horizontal axis. It is easy to illustrate with this figure the social aspect of the different kinds of education. The years of the elementary school period are indicated by a horizontal line, from which only the percentage of children receiving no elementary schooling is taken away, while the percentage of those who receive their elementary instruction at home should also be indicated. The zone that represents the years before puberty, must show how many have during this period passed to higher schools. The next higher zone, which covers the first years after puberty, is to indicate how many are during this period following different walks in life. By far the majority will be seen to take up in active life the struggle for existence; they enjoy no further training or schooling; a goodly number turn apprentices, but only a small number stay in the middle schools: high school, college, and girls' academy. Each year a certain number leave these schools, and only a small percentage complete their course. At the time of graduation from the secondary schools there is again a parting of the ways: some students enter upon the practical duties of life; while others go to the university to prepare for their respective professions. It would not be difficult to secure the approximate numerical

[1] *Ibid.*, II, 8.

data for this diagram; but to obtain the exact data, it would be necessary to collect the statistics from the present social viewpoint. The subject is assuredly interesting enough to warrant any such efforts.

3. It is certain that education and culture must assist in the reconstruction of the social body by assimilating the new generation, and it is no less certain that a friend of the race and of the young will not rest content with this function: he will seek to have our young people not merely as good as their parents, but better; he hopes that human society will not be merely preserved in its present state, but that it will be raised to a higher plane. And it is just because of this hope that the educational reformer and the utopian dreamer will run counter to existing conditions. The paths of the history of education are strewn with the wrecks of their wild tilts, and these should warn us against underestimating the treasures of education and culture, which are given into our keeping, and which are too valuable to be exposed to foolish attacks.[1] But the dreams, fantastic though they may have been, of erratic reformers were founded on that which, if rightly understood, is the proper attitude and one that can well be harmonized with the reverence with which the inheritance of the past is to be received. F. A.Wolf says: "The education that would meet only the needs of the age, will be inferior to that age." Education and culture should assist in making the world better, and they will the more certainly succeed in this the greater is the reverence with which they receive in trust the enduring intellectual treasures of the race and the more they labor to educe the beneficent powers inherent in them. It is especially the structure of society (which comprises all the unions that produce the world's goods and treasures, material and intellectual) that can be improved and perhaps even built up anew by rightly organizing the transmission of the intellectual inheritance.

Plato regarded the system of education as a lever with which Attic society, which was hastening to its ruin, might be saved; and he justly declared that all educational endeavors should be focussed on a point which, lying beyond the changing and passing elements of time and earth, constitutes the *μέγιστον μάθημα*, the supreme teaching content. It is the duty of each man, says Plato, to do his share of the common duty, in order to prove himself a worthy member of the whole organism, whose soul is justice, and the conviction of this duty should be based on the

[1] Vol. I. Introduction, II, 2; III, 2; *supra*, ch. IV, 2 and 3; ch. XX, 5.

supreme teaching content.[1] The great philosopher has here pointed the way that we must follow in seeking to ascertain how the education of the young can be made a wall of defence against the forces that are blasting at the foundations of our social order.

The modern conception differs from Plato's in that the modern educationists are chiefly inquiring how the school can best fit its pupils for successful careers in the different callings. But starting even from their views, we shall eventually recognize the need for higher and ideal aims. To be proficient in one's calling is, indeed, one of the conditions for contented social activity, but it is not the sole condition: the youth must be taught to be moderate in his aims and desires, and he will never be so unless he be brought to understand and appreciate the value of the immaterial treasures. The striving for material goods is necessarily more or less egoistic in tendency and if the mind dreams of no higher treasures, a mad hunt after the world's goods will be the result, and the vocational skill will heighten, instead of allaying, the fever of the striving, and thus the ultimate end will be the breaking of social ties and war between labor and capital.

To correct these disastrous tendencies, we must give our young people ideals instead of teaching them the sordid striving for material goods. Yet if the ideal be still of the earth, it can not assure society of permanency. The spirit of national consciousness and patriotism, for instance, may temporarily check (by substituting other objects) the hunt after the goods of the earth earthly, but they are themselves not above suspicion and are not immune from growing sullied and corrupt. They will lead to pride and lust unless they be brought under the influence of religion. Hence the religious treasures must be prized reverently and transmitted unselfishly to the next generation, for they alone can heal the nations. Thus we arrive again at a *μέγιστον μάθημα*, the *unum necessarium*. To oppose effectively the forces that are undermining present-day society and to assist in rebuilding what has already fallen, education must be based on religion. It must transmit to the young with an almost religious reverence the educational and cultural treasures of the race. It must watch with jealous solicitude over the institutions of learning that have been handed down to us as a precious inheritance, and only upon these foundations may it undertake vocational training.

[1] Ch. XXXV, 1.

CHAPTER LXVI

The Organism of the System of Education

1. If the system of education is to be of any aid in reorganizing society, then it must itself be organic, and hence we shall now inquire into the conditions governing its organic formation. We have as yet found only the teaching system of the Church to be truly organic, that is, born solely of a principle. However, the teaching system of the Church is but a branch of the whole system of education, for the latter includes beside the teaching system of the Church the social and state institutions of education. Thus the whole appears at first sight as an aggregate of elements derived from various forces and added at different times, the result, therefore, of historical accumulation and a product, not organic, but rather mechanical, in nature.

This is best seen in those countries where the State has refrained longest from controlling the schools, for instance, in England. In fact, one might really question the propriety of speaking of an English educational system, as the English schools represent only disjointed and unorganized material. Oxford and Cambridge abandoned the ancient Faith but retained their peculiar organization. However, beside them there exist universities of recent foundation with entirely different tendencies and characteristics. The middle schools also fall plainly into two groups: the Latin schools that date back to the 14th and 15th centuries and, in contrast to them, the Latin schools of later date which are modern in scope. Elementary instruction is imparted either in private schools, or in the poor schools founded and supported by various societies, or in private denominational schools; and it is only recently that the government has begun to standardize elementary education. Other European countries have, it is true, done more in the interest of standardizing and articulating the schools, but what has been done is still far from enough to secure a truly organic formation.

2. If the State fixes the legal relations between the different educational institutions, if it correlates and articulates them, if it founds institutions wherever needed—if it does all this, it will establish only a system; and this means formal progress only. If false principles govern this systematization, if for the sake of uniformity old and valuable institutions of learning must disappear, if the all-powerful State violates the rights of other

authorities, then the condition of the English schools, though they constitute only an aggregate, is preferable by far to a systematization upon such false foundations. In England the vitalizing elements of education are at least not choked, as is the case in the false system.

But the mere aggregate of schools is far from ideal, as the schools should constitute with the other educational agencies one organism. The aim must be to bring about a compact union of all factors, each being recognized at its true value, especially with regard to its assisting in attaining the end of the whole educational system. The present problem is analogous to that of the organization of the content of education.[1] The latter problem dealt with correcting the defects of a curriculum which was but an aggregate of the various studies that were connected with each other only externally. To substitute for this mechanical juxtaposition something living, it was first necessary to concentrate the educational content, so as to correlate the whole course and all its parts with the ethico-religious end. It was furthermore necessary so to correlate the branches with one another as to constitute a continuum. And, lastly, it was necessary to grade the studies, so that it was possible by distinguishing the basic from the accessory to acquire successively the content of education. To establish the right relationship between the recipient and what was to be received, it was necessary to correlate the content of education with the pupil's mental horizon.[2]

Our present problem has something analogous to each of these phases. In the system of education there is also need, first, for correlating all its parts with its supreme end, so as to establish a continuity in education. There is need, secondly, for grading the schools, so that the basic institutions are the norm for the accessory. And, thirdly, there is need for correlating the system itself with the social body, so that the former may best supply the needs of the latter and in return receive from it the greatest possible assistance.

3. The religious element and, after it, the patriotic element represent the core of the educational content; and the representatives of these two elements, the Church and the State, must in the sytem of education claim an analogous precedence of all other factors. In view of the various religious denomin-

[1] *Supra*, ch. XXXV, f.
[2] *Supra*, chapters XXXV–XXXVII, and ch. XLVI.

ations tolerated by the modern State it is plain, that the school must likewise be fair to them all, and consequently the religious character of the school must be brought out in denominational schools. The denominational character conflicts in no way with the character of State schools, for religion is the foundation of all State authority, and far from opposing the legitimate authority of the State, every denomination will recognize it and support it in all its just demands. A dispassionate study of the subject must reveal that an intimate relationship exists between the throne and the altar; and the battlecry of the anarchists: "No God, no master," has thrown a new, if lurid, light on this old truth.

That the elementary school should be denominational, is based on historical grounds; and internal reasons support the claim. Historically, the elementary school developed from the parochial school, and to the latter it owes its ideal core, which raises it above the level of purely intellectual training.[1] An internal reason for making the elementary school denominational may be derived from the fact that the instruction of children is part of the cure of souls, for thus the different religious bodies must consider it their sacred duty to provide for the religious instruction of their little ones, so that, if religion be excluded from the elementary schools, they are in conscience bound to open special schools for the teaching of religion. But this severing of religious instruction from the rest of the curriculum involves a separation of what belongs together, and the school branches can not be permeated, as they ought, with the religious elements, and neither can the religious instruction be correlated with them. But to relegate religious instruction to the second place and make, say, moral instruction the core subject is impracticable; for moral instruction would either be opposed to the religious instruction and thus be a menace alike to education and morality; or it would be a vacuous thing because deprived of what religious instruction possesses in public worship and in the precepts governing life, and would, therefore, be useless—and since the elementary school can use time and energy to better advantage—even harmful.

To take religion out of the schools is a violation of a sacred right of a Christian people. The family is a member, not only of the organism of the State, but also of the organism of the Church,[2] and the right of the State to introduce compulsory

[1] Vol. I, ch. XV, 1 and *supra*, ch. LXIV, 3.

[2] Ch. LXIII, 2.

education does not include the right to enforce disloyalty to the Church. The parents' right to the religious instruction of their children was recognized by the originators of compulsory education, the enlightened autocrats of the 18th century, though they favored violent measures otherwise.[1] It was left for the French Revolution, which trampled upon so many human rights, to rob man of this inalienable right also.

The denominational character is the normal thing for the higher schools also, for the ethico-religious education must ever be the core of the intellectual. The learning in the school must be supplemented by a school life; and the religious services—which must, if they are to mean anything, be conducted according to the rites of a definite denomination—are an integral part of this school life. To establish an inner relationship between the religious instruction and the other subjects, especially history and language, the specific character of the religious instruction must be brought out; and it would be only an imperfect application of the concept of concentration to be content with vague and colorless generalities. Furthermore, the school can better co-operate with the home, if both recognize the same religious basis; and even if the home has abandoned all religious practices, the religious atmosphere of the school may remedy, to some extent, this deplorable condition. Local conditions may at times render inter-denominational schools necessary, and with great prudence and tact it may be possible to obtain even in such schools the ethico-religious ends of education, yet the differences between their pupils are such as to put perfect success out of the question. What is a thing of necessity may not be made the standard.

The denominational schools have been charged with failing to cultivate the national ideals and with proving unfaithful to what should be their chief aim: to unite by as many bonds as possible the young people of the nation, instead of estranging them from one another by stressing their religious differences. This national unity is, indeed, desirable for the sake not only of the nation but also of religion. There is no sincere Christian but hopes against hope for the fulfillment of the Master's words concerning the one Shepherd and the one Flock.

[1] Vol. I, ch. XXVII, 6. Frederick II. condemned the practice of compelling Catholic parents to send their children to the schools of the "natural religion." He says in his *Examen de l'essai sur les préjugés* (*Œuvr.*, éd. Preuss, IX, p. 157): "C'est une violence d'ôter aux pères la liberté d'élever les enfants selons leur volonté; c'est une violence d'envoyer ces enfants à l'école de la religion naturelle, quand les pères veulent qu'ils soient catholiques comme eux."

But this unity is to be realized, not by obliterating the points of difference, but by bringing these to an intellectual issue. The different denominations should meet, not on the ground of a vague indifferentism, but in the Faith clearly presented to all. The school can and should foster this attitude of mind without, however, interfering with the different religious beliefs. These beliefs are treasures, not only for the adherents of the respective denominations, but for the nation; for they are a heritage from the generations of the past. The Faith of a Boniface and the other Apostles of Germany and the accounts of their holy labors in and for this Faith are a treasure alike for religious and national education. Luther's teaching that Faith is the most precious of all gifts and that Scripture is the word of God, and the hymns which have given expression to these teachings—all this has inspired thousands of German hearts; and the Protestant school is in duty bound to preserve these treasures in opposition to the unchristian and un-German doctrine that Faith is something indifferent, as well as in opposition to the lies dug up from the old Gnostics and rabbis anent the spuriousness of the Gospels.[1] It is not only the history of the heroes of war that must be preserved as a valuable possession of the nation, for of still greater importance is the preservation of the memory of those heroes of peace who preached the truths of Christianity to our forefathers; but their splendid deeds will be unintelligible to those coming after us unless they can view them in the light of their own personal Christianity.

4. The system of education has, like the content of education, developed successively, and its parts are of themselves not correlated so well as the members of a body. The State does, indeed, connect the parts of the educational system, but this means only one step toward true correlation; and the union established by the authority of the State is insufficient, and must be supplemented by the correlating work of the teaching profession. The teachers can correlate the branches of the system of education, and their efforts must be directed toward accomplishing on a larger scale what the medieval universities did on a smaller.

Strictly speaking, there is at present no one teaching profession, but merely different categories of teachers that are al-

[1] *Chizzuk Emuna*, a work written by Isaac ben Abraham Troki (died 1594), has been the source for the "higher critics" of the Gospels from Voltaire to Strauss; cf. K. Werner, *Geschichte der apolog. und pol. Literatur der christl. Theologie*, 1864, I, pp. 80 ff.

most as exclusive as the castes of ancient Egypt. The university professors consider themselves research workers and will have no intercourse with the schoolmen. Among the latter there are again two well-defined classes of teachers: those teaching in colleges and high schools look down with scorn upon the "schoolmaster" and the "schoolmistress," while these in turn think themselves superior in teaching ability, for this ability they deny to all other classes of teachers.

The chief reason for this aloofness and class-consciousness among various bodies of teachers lies in the separation of what should everywhere be found together: knowledge and skill in teaching, or mastery of the content of education and skill in its presentation, or positive knowledge and methodological ability. The university professor must, of course, be a master in his special field; but, unless he wishes to make a practice school of his students, he should have previously spent some time in teaching. On the other hand, the elementary school teacher should have entered deeply into what he is to teach and should, as far as possible, have examined its several phases, even though he can not expect to present all that he has learned to his classes. The teachers of the secondary schools should likewise be versed equally well in the sciences and in the methods of imparting their content. There are, we must admit, university professors who are intent upon the inner formation and mental growth of their students, and in the secondary schools we meet also with teachers who write learned treatises and others who are gifted with remarkable didactic skill; and in the elementary schools, too, we find teachers who are earnestly striving after self-improvement and verify the truth of the saying *Discendo docemus*. Still these representatives of the teaching profession are too few and far between to establish points of contact between the different classes of teachers.

These points of contact can not be established before we have filled the one great gap in our educational system: adequate provisions must be made for training the professors for our *gymnasiums*.[1] These professors can readily receive at present the training in the respective branches they are to teach, but the imperative need is that this training be supplemented by a course in the theory and practice of education as well as by work in a practice school. To make this possible, the pedagogical seminar of the university should be enlarged and connected

[1] This is no less true of American college conditions: see *Cyclopedia of Education*, Vol. III, p. 76.

with the *gymnasium*, whose philosophical course connects it with the university and whose lower classes follow immediately upon the work of the elementary school.[1] This arrangement would supply a basis for the instructional technique of all grades and would thereby furnish a common centre for the training of the teachers of all kinds of schools. Thus the future university professor may profitably spend some time in teaching the senior classes of the *gymnasium;* and the future professor of the *gymnasium* may meet masters of elementary school technique and will hence learn to appreciate this technique as supplementary to his own teaching; and, lastly, the elementary school teacher, who is engaged in the lower classes, will learn to regard himself as a member of the whole organism of the teaching body, a fact which will not only increase his professional consciousness, but also let him realize his limitations.

That all the members of the teaching body should again be brought to realize their solidarity, must be demanded on even more important grounds than those discussed above. If the university professors lose their linterest in the school and their appreciation of its work, then it is idle to complain that the university as such does not influence our school system. Still this condition of affairs is far from normal and compares unfavorably with the educational conditions of the Middle Ages.[2] Deprived of the vivifying contact with teaching, science can not but grow rigid; and the work of teaching, if deprived of the inspiration of science, must become superficial in content. If the elementary school teachers are cut off from the representatives of the higher learning, their class-consciousness will likewise develop along the lines of exclusiveness. Tendencies, not clearly defined at first, will spring up, and the baser elements will work themselves to the surface, while the better elements are torn along or terrorized by the radical forces that join hands with ignorance.

Here lies the social question of the teaching profession, and two societies are to be commended for having undertaken to solve the problem. The first is the "Society for Scientific Pedagogy," founded by Ziller in 1868, which is a fruit of Ziller's pedagogical seminar conducted at the University of Leipzig since 1862. This society is open to the teachers of all grades of schools, and though its aims have, in some points, not yet been clearly outlined, it has suggested where we must begin in creating an organically graded teaching profession. In 1907

[1] Cf. *infra*, ch. LXX. [2] Vol. I, ch. XIX, 7 and *supra*, ch. LXIV, 2.

another society, similar in scope, was organized under the name of "Society for Christian Pedagogy."[1]

5. We have seen that the schools must be graded according to the age of the pupils and according to the subject-matter of teaching, but in dealing here with the organic formation of the system of education we must treat the grading of schools from the viewpoint that all educational institutions are either basic, and therefore, typical for the rest, or accessory. The basic institutions are the germs for the organic formation; they are the supports and standards for the schools of later growth. We have two such basic institutions, remarkable for their history and their permanent functions, *viz.*, the university and the elementary school.

The system of the four faculties, which can be traced back to the division of the sciences into basic and accessory, represents the ground plan of the university studies. The faculty of philosophy, being heir to the "ordo artium," includes philology and mathematics beside philosophy. The highest faculty is that of theology; while the faculties of law and medicine deal with the accessory sciences, the former with the historical and the latter with the natural sciences. Though the natural sciences are treated extensively outside the domain of medicine, yet the university school of medicine occupies, in contrast to the schools of architecture, technology, agriculture, etc., a special position, partly because of its universal scope and partly because the vital interests are literally its object. Medicine deals with the somatic element of human life in the same way as jurisprudence deals with its social, and theology with its religious, element. Wherever these elements are found together, there an opportunity presents itself for applying the sciences of the university faculties. For instance, in school hygiene, a science created by pedagogy, representatives of theology, medicine, and jurisprudence collaborate, as may be seen at the congresses for school hygiene, which are attended by theologians, physicians, and jurists.

The higher schools of applied science should be assisted in their work by the university, and some universities have properly admitted and recognized them as university schools. The university must, to be true to its name: "universitas litterarum," teach the applied sciences; and, besides, scientific theory will

[1] The first year book of the Society was published in 1908 (Kempten, Bavaria).

only gain by remaining in touch with scientific practice. The university schools of the applied sciences, having been founded to meet actual needs, may serve to remind the other university schools to keep abreast of the times and to adjust themselves to changing conditions.

The university, being the school of higher learning *par excellence*, must naturally outline the scope of the *gymnasium*, whose function it is to give a liberal education in preparation for the higher studies. The period of experimentation with the *gymnasiums* dates from the day when this relationship, founded on historical and internal grounds, came to be ignored. In reforming the *gymnasium* so as to have it fit its students for other than university studies, educators overlooked the fact that the traditional gymnasial course requires but a slight modification to make it preparatory to any higher studies. The university should admit to its graduate schools none but *gymnasium* graduates; and all *gymnasium* professors should have attended the graduate schools of the university. The philosophy studies of the *gymnasium* are the link connecting the latter with the university, and it is desirable, though not necessary, that the student preparing for a mechanical profession pursue them in their entirety. Nothing would be lost if some *gymnasiums* could not meet the higher demand to give a full course in philosophy, and would therefore have to close their doors, for this would, no doubt, permit of improving the other institutions. The higher classes of the *gymnasium* may, as was stated above, serve as a practice school for the training of university professors.

6. The university is a standard for other schools by virtue of the dignity of the educational content entrusted to its care; and the elementary school is a second standard by virtue of its mission to transmit knowledge and morality to the masses. The relationship between the university and the elementary school is typified by two institutions of the primitive Church: the catechetical school and the catechumenal school, the former being the higher school or academy of philosophy and theology, while the latter met the practical need of instructing children and converts from paganism.[1]

The administration of the educational content that is the property of the masses, is entrusted to the elementary school, and being thus the representative institution for elementary studies, it may be considered the parent of all those other kinds

[1] Cf. P. J. McCormick, *History of Education*, Washington, 1915, pp. 70 ff.

of schools in which the elementary studies form the chief, or at least a large, part of the curriculum. These schools may be divided into: (1) variants of the elementary school, *e.g.*, city schools, rural schools, industrial schools, poor schools, burgher schools, etc.; (2) boarding schools with an elementary school curriculum, *e.g.*, orphan asylums, protectories, institutions for the blind, the deaf-mute, or the feeble-minded; (3) institutions for children not yet of school age, *e.g.*, kindergartens, day nurseries, crèches; (4) institutions for continuing and supplementing the work of elementary schools, *e.g.*, Sunday schools, evening schools, summer schools, continuation schools, etc.; the so-called folk high schools of Northern Europe belong to this class; (5) institutions for training elementary school teachers: normal schools, teachers' seminaries, teachers' colleges. Most of these schools are obviously connected with the elementary school; but this connection must for the sake of the organic formation be stressed in the case of the normal school and the continuation school.

The normal school must be based on the elementary school, for it is evident that the elementary school teacher must be instructed thoroughly in the branches he is to teach. This principle alone will preserve the normal school from the encyclopedic shallowness to which it naturally inclines; and far from imposing too many restrictions, this principle merely does away with what is worse than useless in view of the future life work of the students—a subject which we shall treat more fully in chapter LXX.

The continuation schools are important in connecting the elementary school with the trades and industries. The training of apprentices has been sadly neglected since the disappearance of the guilds, and the conditions resulting therefrom have invited the inroads of Socialism: "Work is no longer considered a blessing, for it breeds hatred and discontent; and the period of apprenticeship is no longer a time of serious preparation for the duties of life, but the preparatory school for dissatisfaction."[1] These ills can be remedied only by the concerted action of several agencies. It can not be urged too strongly that the modern labor unions should borrow of the medieval guilds, not only their industrial, but also their moral and religious, tendencies. Much could be accomplished by introducing class instruction in the trades and industries. This is done in the Austrian in-

[1] Jul. Schulze, *Das heutige gewerbliche Lehrlingswesen*, 1876, p. 57.

dustrial schools and in the Belgian "*atteliers d'apprentissage.*" Austria and Belgium have likewise introduced manual training into the elementary schools and have opened continuation courses.

There can be no doubt that the continuation courses had best be conducted in connection with the elementary school, for the latter represents the moral end of education and so raises the whole matter above the level of pure industrialism. The sore spot in present-day industrial training is the moral and religious neglect of the apprentice. During the most impressionable years of his life, when the pupils of the secondary schools are enjoying the blessings of religious and humanizing instruction, and when the youth in the rural districts is still under religious influences, the apprentice in our modern city lacks the ideal elements almost entirely. The journeymen's societies (*Gesellenvereine*) have, it is true, attempted to improve these conditions, but their sphere is withal too limited and must be supplemented by the preparatory work of special schools.

An institution that attacks the evil at the root is the German continuation school, where attendance is compulsory for about eight hours every week. Young people may follow any employment they can get, but their employers are compelled to allow them the requisite time for attending the schools. Practical instruction is given in a large number of various subjects. The buildings are quite splendid. Every possible modern appliance is provided, and, needless to say, the best of teachers. The result of this work is that in those towns where there are continuation schools, the number of those who follow "blind-alley" occupations, or run the streets, is greatly diminished. Out of the eight hours a week one is devoted to religion.[1]

7. The demand concerning the organic formation of the system of education includes the further demand that the educational system function as an organ of the social body. The latter should be recognized as a definite social body whose form is the result of geographical, historical, and other conditions. The principles that govern the organic formation of the system of education and that flow from its very nature must be correlated with the social body; they must be individualized for each given case, and the special points suggested by each case must be harmonized with the general principles. In this sense we may

[1] Cf. R. H. Best and C. K. Ogden, *The Problem of the Continuation School*, London, 1914.

apply to the educational system what Macaulay says of the political constitution: both must fit the body for which they are designed, for "a man who, upon abstract principles, pronounces a constitution to be good, without an exact knowledge of the people who are to be governed by it, judges as absurdly as a tailor who should measure the Belvidere Apollo for all his customers."[1] Looked at more closely, the problem implies two things: the organization of the system of education must be such as, first, to meet the special needs and, secondly, to secure the co-operation of the special and local factors. The first principle implies that the authority to whom the work of organizing is committed appreciate the legitimate variants of the educational institutions, and is thus opposed to an absolute uniformity of the schools. The second principle implies that the same authority not only tolerate but invite the co-operation of all forces already at work, and thus forbids the monopolizing of instruction.

The modern organization of education is in the main unfavorable to the individualizing tendency. Its policy is to establish a certain type of school irrespective of local, historical, or other peculiar developments;[2] and we may repeat of it what has been said of routine methods of instruction: while intent on building a water system it covers up springs and fountainheads of water. Our universities have, of all our schools, preserved at least some individualities. Each of them has preserved its own physiognomy, though they also lack their proper character. They are more uniform than the *studia generalia* of the Middle Ages, which preserved, despite their international student body and scope, local traditions and a local character. The medieval institutions imitated also in this respect the Church, for she knew how to combine with her Catholicity local and popular rites.

Our *gymnasiums*, however, are even more uniform than our universities; they are, in fact, but specimens of a genus. Even such variants of the gymnasial type as had proved their value in a long historical development, as the "Fürstenschulen" of Saxony, had to conform to the stereotyped model; and many of the new *gymnasiums* in the large cities have not even a name, but are numbered like the streets in America. Educationists do not seem to note the fact that these schools have no history and are, therefore, lacking an educational help of the older *gymnasiums*.

[1] *On Mitford's History of Greece*, in Vol. I. of Macaulay's *Critical and Historical Essays*, Boston, 1900.

[2] Vol. I, ch. XXX, 6.

The conservative English are better models in this respect. Their Latin schools possess, not only an individuality, but also a distinct character, and can, consequently, also develop character, whereas stereotyped schools can produce only stereotyped men. A difference in educational content does not conflict with the true unity of schools. There is true unity as long as the framework of the studies be in the main the same, even if this or that side of the educational content be more prominent. If the course of study is truly organic, it will admit of being adjusted to special conditions. But if it is the result of merely adding together some atomistic elements, then, indeed, will it be necessary to follow it slavishly, so that all be held together; a recipe will not admit of variants. Of course, there are limits to the variations allowed, and in the face of a society that is worshipping at the altar of the material interests, the State should take counsel with the Church and fix a certain amount of the ideal elements of education. But in reference to other elements, particularly the accessory disciplines, the laws should be less rigorous.

8. The elementary school must impart the elements of knowledge and will hence develop a fixed type more readily than any other grade of school. But the scant assistance that it receives from the home and the tender age of its pupils necessitate the individualization of instruction. If the geographical instruction begins, as it ought, with a study of the pupils' actual environment, then each and every village school will have something individual; for each village has its specific character and traditions. But the local conditions will affect, not only the mental horizon, but also, to some extent, the interests and manners and customs; and the peculiarities resulting therefrom must be reflected in the instruction that would remain in touch with actual life. Thus a village school in the mountains must differ from a village school on the plains or on the coast.[1]

This individualization will, in part, take place spontaneously. But in organizing the schools the fixed elements should be distinguished from the variable. The first work in this field still remains to be done. What is needed is a natural history of the schools, to be written by a writer gifted with Riehl's powers of observation and description; and such a natural history while representing the variants of the village school, would show how the different peculiarities are projected on the school. However, the levelling process is characteristic of the present age, and hence

[1] *Supra*, ch. LIX, 2.

there is evident need for scrupulously preserving even the humblest institution that embodies local traditions. The elementary school can and should preserve to the nation its songs, legends, and myths. Among these it should cherish especially those that are threatened with extinction, and should also revive such as are forgotten. But to carry out this mission, it must remain in close contact with the people, their daily life, customs, manners, and particularly their religion.

Modern sociologists are fond of speaking of the folk-soul, a term that is meaningless to many, but which, if rightly understood, expresses a deep truth. We may use it here to state briefly what must be the object of the individualization of the elementary school: the elementary school, to whose care the general intellectual treasures of the race are committed, must so transmit and disseminate these that the spontaneous stirrings of the folk-soul respond to them, and to this end the elementary school must carefully note the peculiarities of the folk-soul.[1]

9. Once we admit that the system of education must be adjusted to the society and nation that it would serve, we must accept the consequent conclusion that the powers and forces of the respective society and nation must be invited to co-operate in establishing and preserving the educational system. Once we reject uniformity of schools as being opposed to legitimate individualization, we must reject all monopolizing as being opposed to the co-operation of legitimate factors in education. A nation must regard its schools as *its* schools, as its own property; but it can not so regard them unless it be allowed some share in their operation. The social body will not coalesce with an organ until it nourishes and preserves it with its own powers.

Thus the medieval universities, being the products of society, were—notwithstanding their privileges, their special language, and their special customs—never out of touch with the life of the people. The people could well appreciate the value of these *studia generalia*, for these were intertwined with their own past history. Almost the same may be said of many Latin schools of the Renaissance, and the English people have preserved a kindred feeling for the older colleges of their country.

[1] The rural school has more opportunities than any other institution to coalesce with the place and the people it is serving. In rural districts the school teacher may grow so old in service as to look back upon generations of his pupils. Kutscher, a rural school teacher in Petze, a village near Hildesheim, taught in the same place for 60 years (1827-1887), and Schafer, his predecessor, had taught in the same school for 48 years (1777-1825).

With regard to the elementary school, the State should not only levy taxes on those directly affected, but should allow them also a certain share in the management of the school and in the appointment of its teachers. There are certain factors of the community of life which the State has, it is true, incorporated into its own organism, without, however, depriving them of their self-activity, such as the county, township, and all similar autonomous organs. These factors should, as a rule, be permitted to co-operate in founding and governing schools, and hence the demand for the "school community" is justified in principle.[1]

But to accede to this demand implies that the State allow other forces to co-operate in the field which it has, at least in part, opened to cultivation, and so there will ever be but few cases of monopolies surrendered voluntarily. But every decentralization will meet with similar difficulties, which, however, are not insurmountable as soon as one can prove that the gain for the public good compensates for a temporary loss. But to make the decentralization in educational matters prove a real gain for the public good, one must guarantee that the decentralization shall not entail the forfeiture of any treasures preserved by the state school system. There would asuredly be no gain, if the State surrendered its control to a society that serves material interests, or if it conceded too much to one-sided national tendencies. To safeguard the treasures which the State preserves in common with the Church is more necessary than the freeing of the social forces, for these are not needed unless they can co-operate in preserving and transmitting the intellectual treasures of the race.

[1] Cf. Willmann, *Über W. Reins Theorie der Schulgemeinde*, reprinted in the author's work *Aus Hörsaal und Schulstube*, Freiburg, 1912, 2nd ed., pp. 349 ff.

III

OF SCHOOLS

CHAPTER LXVII

The Gymnasium[1]

1. Historically the *gymnasium* developed as the preparatory school of the university, and only as such can it be a member of an organic system of education. It has the advantage over modern schools in having a historical character, and that in a double sense: the *gymnasium* has a history and also represents the historical elements of education as embodied mainly in the ancient languages. It is distinguished above all other educational institutions for being in full possession of the educational instruments; it can serve the highest ends of education, *i.e.*, the ethico-religious ends, not only by its religious instruction, but also by its courses in literature and history; its language courses offer excellent means for inner formation, and afford, at the same time, an opportunity for acquiring varied knowledge and skill. No other school has so full a command of the educational instruments, and the *gymnasium* might hence be called the full school ("Vollschule").

But the variety of the gymnasial course of study may readily lead to unmethodical practices of teaching. To counteract this tendency, it is necessary, first, to distinguish the basic subjects from the accessory; secondly, to observe the grading of studies indicated by the series: philology—mathematics—philosophy; and, thirdly, to permeate the whole course with Christian elements and to correlate the latter with the classical.

Latin and Greek, the instruments of higher learning, the A B C of science, constitute the distinguishing feature of the *gymnasium*, and the man in the street rightly considers only such institutions as *gymnasiums* as teach both Latin and Greek. The classical studies determine the character of the whole gymnasial course; that is, the higher instruction in religion, the modern languages, history, and even mathematics and the natural sciences can and should show the influence of the classical studies;

[1] The reader may readily apply the contents of the present chapter to high-school and college conditions in America and England.

and if the teaching is truly organic, then the whole institution will be classical in tendency and spirit. The ancient authors offer the most convenient points for dividing the classes, and to the graduate of the *gymnasium* they appear as milestones in the way he has covered.

In selecting the school authors we must distinguish between the different significance that the Romans and the Greeks have for us. Both have, one may say, grown into our mental life at different points. Of the various gifts of Rome to the modern world, its language is justly considered the most valuable; and of the achievements of the Greeks, it is their philosophy which has first and most deeply influenced the world view of the Christian peoples. The language of the Romans and the wisdom of the Greeks are, therefore, the most valuable elements for the course of instruction. But to acquire the language of the Romans you must go to the masterpieces of Roman literature; you must read their poets, historians, orators, and select especially those works that possess moral power and are, consequently, truly educative in their influence. And, similarly, if you would imbibe the wisdom of the Greeks, you must read, not only their philosophers, but also their poets and other writers, for to the young the wisdom of these authors appeals more than that of the thinker. And so both the language of Rome and the wisdom of Greece direct us to the same source: literature, perfect in form and moral in content.

Looking over the extensive field of literature, we may select a group of authors to constitute, so to speak, the inner circle; and about them we may group two other classes of authors suitable respectively for preparatory work and for supplementary reading. To the inner circle belong of the Romans: Vergil, Horace, Livy, and Cicero. Vergil's *Æneid* is "a reflection of the grandeur of Rome, and an echo of its glorious history" (Nägelsbach); and it is truly a world book, for it has been a favorite school text for 1900 years. Horace, the poet-laureate of Augustus, is the most quotable of authors (Lytton), and his verse, though Latin in words and forms, is Greek in beauty and spirit. Livy's theme is the "high mission of the Roman people to rule the world—a mission entrusted to it by the deity and carried out by the *virtus* of the Romans" (Köchly). Cicero is "the greatest master of composition that the world has seen,... who imbibed all the grace and splendor which attached to Rome and became what he admired.... They (the other Roman authors) write Latin, Cicero writes Roman" (Newman).

Of the Greeks the following belong to the same inner circle: Homer, Herodotus, Sophocles, and Plato. Homer, the father and prince of poets, is the source of ancient culture and the basis of Greek learning and philosophy. Herodotus, "the Father of History," is distinguished alike for deep piety, glowing patriotism, and sagacity of judgment. Sophocles is the greatest of the Greek tragedians, and his plays still exhibit some connection with religious worship while reflecting the splendor of the Attic mind at its best. Plato presaged some of the religious and moral truths of Christianity.

What authors are to be taken up for the preparatory work must be determined by the needs of the course of instruction. There is need evidently of such a Roman poet as may offer suitable material for learning the elements of prosody and mythology. Ovid unquestionably meets this need admirably. There is need, too, of a prose writer with a simple narrative style, whose sentence construction is not too difficult. And such is Cæsar, though scant honor is done him, the "summus auctorum, divus Julius," by being thus given to the beginners in Latin; still in view of the needs of the whole course, it is unavoidable. In the schools of the Humanists the beginners in Greek read the *Tablet of Cebes*, for which modern practice has substituted Xenophon's *Anabasis*. However, both works should be read: the *Anabasis* is an ideal book for the young and a good preparation for Herodotus, while the *Tablet of Cebes* prepares for the didactic writers. The students will take as much interest in sketching the places named in the latter as in tracing the line of march of the Ten Thousand, and the allegory, being very vivid, offers no difficulties.

To the class of supplementary reading belong those authors whose works are educative in content and intelligible to the young, but which can not be made to assist directly the chief aim of the classical studies. To this class of authors belong of the Greeks the didactic and the lyric poets and the orators, and of both literatures the philosophical historians.

The *gymnasium* should train its students to write and speak Latin, but with respect to Greek it may rest satisfied with teaching them the understanding of texts. Latin composition writing may well be the object aimed at in Latin instruction. Mere retranslations are but a handle without a blade; and the attempts at Latin composition will not be over-ambitious, if the narrative style is preferred and the exercises are modelled after the authors read in class. But the exercises in Greek

composition should be reduced to the minimum. They may be employed in their simplest form in teaching Greek etymology; but used to a greater extent they will become parasites of the authors.

2. In the first class of the *gymnasium* the instruction in the mother-tongue may well be combined with the instruction in Latin. In the lower classes the classics treating of medieval tales and legends should be given the preference; and these readings should be interspersed with sketches of local and national history. In the middle and upper classes the students should read modern classics, and these latter should be paralleled with ancient classics. While some points of literary history are necessary for the full appreciation of a classic, the *gymnasium* may dispense with a chronological history of literature. By following up the classical period we arrive at the Romantic Age and the revival of the Christian-national element, and thus are led back to the Middle Ages; and the medieval classics had best be read now in the original texts. In reading Middle High German classics the teacher must strive to preserve the golden mean between full philological treatment, for which there is not time enough, and superficial guessing, which prevents the development of scientific habits. The historical material pertaining to the ancient languages and literatures as well as to the literature of the mother-tongue had best be collected in one textbook.

With regard to the modern foreign languages the *gymnasium* should not attempt too much. It would be idle to think of mastering any of them in the *gymnasium;* and the *gymnasium* should rest satisfied with removing some of the elementary difficulties, and should thus prepare the way for self-instruction or private study. It is not advisable to continue this elementary study during the whole course, and the lower classes had best confine themselves to Greek and Latin, reserving the study of modern foreign languages for the upper classes. The students will then, because more mature, appreciate the practical value of this study, and their previous studies will enable them to compare the new languages with Latin and the mother-tongue. It goes without saying that if but one foreign language be required, better results will be attained than if two must be learned. Still the *gymnasium* student should be able to learn the elements of two foreign languages.

Form study should be taken up in the lower classes to prepare for mathematics, which is the proper subject for the middle

class. Mathematics can well be correlated with the classical studies by taking note of the various points connecting it with classical antiquity. The instruction in mathematics should, as in classical antiquity, lead up to elementary astronomy (mathematical geography, science of the calendar); and the subject-matter of mathematics, especially the examples and illustrations, should be selected from the very beginning from this point of view. Spherical trigonometry will then not be beyond the scope of the *gymnasium*, but analytical geometry is beyond its scope: analytical geometry is, if understood, unusually interesting, but requires so much time and attention as to be practically impossible in a course of study whose chief function is the study of the classics. Solid geometry is much inferior to trigonometry in educative content, and should, therefore, receive less attention than the latter. The problems of algebra should be grouped with a view to the relationship between mathematics and the other subjects.

We have elsewhere shown how the study of philosophy and theology can be correlated with the classics and thereby receive the character of gymnasial studies.[1]

3. The accessory disciplines will allow more time and energy for the basic subjects and can also be taught more thoroughly, if they are taken up successively instead of being studied at one and the same time. Natural history should be studied as a department of home and general geography, and the latter subject should be taught in the lower classes only. This arrangement certainly precludes an exhaustive treatment of either natural history or geography. Still some of the viewpoints of modern geography can be brought out, especially in so far as they establish combinations and thus assist both the memory and the understanding. The chief object of the natural history instruction should be to teach the pupils to commune with nature; the collecting of specimens and the mounting of them will materially assist in this; yet the teacher should never strive for anything like systematic completeness in this regard.

Historical instruction belongs to the middle classes. The use of maps is indispensable in teaching history. Local elements that may lend color, the refreshing spirit that breathes from original sources, and whatever historical materials are contained in the other branches—all should be turned to good account; and special care should be taken to preserve the epic character of the historical instruction. To correlate history with the clas-

[1] *Supra*, ch. XXXV. and ch. XLV.

sical studies should not be difficult, as some of the school authors are historians, and the teacher of history should miss no opportunity for quoting from classical source works (*loci classici*) and for citing historical, especially Latin, sayings.

Natural philosophy should be taught in the upper classes. It presupposes that mathematics has modified and perfected the student's concepts of the sensuous world and has aroused in him a strong interest in causal relations. The instruction in the natural sciences supplements the philosophical instruction and leads the youth to understand the modern world, for whose battles the *gymnasium* must fit him. But her also the *gymnasium* may not strive for anything approaching systematic completeness. It must content itself with treating such parts of an immense field as are related to the other subjects of the course. The elements of mechanics should be studied because of their relation to mathematics and astronomy. The study of sound may claim a position similar to that occupied by the theory of music in the system of the seven liberal arts. The study of sound as well as of light is related to the arts and psychology; and the study of heat and of electricity and magnetism is related to geography. Some of these subjects were studied by the ancients and may easily be correlated in several ways with the classics. The materials for natural science instruction should also be selected from the viewpoint of experimentation and objectivation. The teacher should not attempt anything requiring elaborate experiments, and a series of school experiments should be determined upon. Whether chemistry should be taught in the *gymnasium*, still remains an open question. However, the *gymnasium* course of study will not be unduly enlarged by a brief course in chemistry; but this subject must not foster the encyclopedic tendency.

4. While the classical course of study is actually divided, for external considerations, over two grades of schools, it were better, in view as well of the students' mental development as of the nature of the branches themselves, if it were divided over three grades of schools.[1] The three lowest classes of the *gymnasium* should constitute the lowest grade of classical school with the following subjects: religion, home and general geography, the mother-tongue, elements of Latin, first elements of Greek, form study, and arithmetic. All these branches are correlated, and thus no energy is wasted on heterogeneous materials. The

[1] Cf. *supra*, chapters XXXVII–XXXIX.

three middle classes of the *gymnasium* should constitute the secondary classical school with the following subjects: religious instruction with special attention to historical development, universal history, the first reading of classical authors, and the first study of mathematics. A course of three years should constitute the highest grade of classical school, which prepares for the special studies at the university. The following subjects should be taught in this school: theology, philosophy, ancient and modern classics, elements of modern foreign languages, mathematics, and physics.

CHAPTER LXVIII

Modern Schools

1. The distinguishing trait of the *Realschule*[1] and of the girls' academy is that they base their course of study on modern cultural subjects. A closer examination of the principle underlying this fact and its exact delimitation will disclose all the points to be considered.

The instruction in these schools is modern in the sense that their subjects are mainly taken from modern life, and that they prepare their pupils more directly than the *gymnasium* for the modern world. Consequently, modern foreign languages must occupy a more important place in these schools than they do in the *gymnasium;* hence they must be taken up earlier and more class periods must be devoted to them. In selecting the school authors attention must be given, not only to their moral worth, their style, and their clearness, but also to the consideration whether they be truly representative of the language and spirit of the respective nation. The literature to be read must not only be good French or good English, but genuinely French or genuinely English. Hence even the beginners should read only such matter as breathes the spirit of the foreign nation, as nursery rimes, proverbs, tales, legends, etc. Mager's language book illustrates how the principle is to be applied in studying French; and the splendid English reader of Dürr and Vietor is an application of the same principle. Such classics are to be preferred as will familiarize the students with the foreign people, its habits, customs, and history. Thus Barantes' *Jeanne d'Arc*

[1] What is said in the present chapter on the *Realschule* may readily be applied to the non-classical high school as well as to commercial schools.

is better adapted to the French course than Voltaire's *Charles XII*, which is usually read; and the historical plays of Shakespeare, though inferior to his other dramas in poetical value, should not be neglected in the English course.

The modern character of these schools is apparent also in their methods of teaching, in so far as the materials of instruction should be correlated more extensively with the present. The starting-point must be the pupil's mental horizon; the teacher must proceed from the given to its presuppositions, from the specific to the generic, *i.e.*, he must extensively employ heuristic and analytical methods. In religious instruction, for instance, more attention should be given the present-day conditions of the Church, to her present-day institutions and forms of worship than to those of the past. Modern history and geography, and the study of present-day civilization should receive particular attention. Still the historical instruction should not be mere patch-work.[1]

2. But lest too much attention be given to current condition, the modern school should be mindful of its function of furnishing a certain historical understanding of the present. First of all, the cultural treasures of the past must not be ignored. Medieval poetry should be read especially in girls' academies; banish the literary titbits and the smattering of literary history from the academy, and let the whole poems purify and ennoble the heart and feelings. Modern editions of medieval classics may serve a good purpose, but more mature pupils may read with more profit some of the *Canterbury Tales* in their original form. The treasures of ancient classical literature should also be made accessible in good translations and should be compared with English and American classics. Andrew Lang's beautiful versions of the ancient classics and Hawthorne's *A Wonder Book* and *Tanglewood Tales* will render valuable service in this regard. And it is interesting to read, for example, Tennyson's *Passing of Arthur* in connection with Malory's *Morte d'Arthur*, or to compare selections from Homer and Vergil, or Shakespeare's classical plays with Greek and Roman dramas.

For the *Realschule* to teach Latin so as to fit its students to read the Latin classics in the original would convert it into a hybrid school, whose graduates could, nevertheless, not be admitted to the graduate schools of the university without lowering the standards of the latter. The elements of Latin may,

[1] *Supra*, ch. XXVI, 4.

however, be taught for the purpose of developing the language consciousness and of securing a foundation for modern language studies. The girls' academies would likewise gain by an elementary course in Latin, for such a course would counteract their common tendency toward superficial language teaching. If the attempt is ever made seriously to reform along pedagogical lines our vapid and characterless education of girls, then the subject of Latin will be the main question anent the curriculum.

3. The curriculum of the modern school should be humanistic, *i.e.*, not teaching the *realia* exclusively. The *Realschule* and the girls' academy should teach primarily such subjects as treat of man as man and of the values of a broad humanity, instead of such as deal with physical nature. The name of the *Realschule* should not give rise to a misconception of its function. Its name only indicates that the *realia* are studied beside the humanistic subjects, but not that the physical sciences may predominate over the moral sciences; else the *Realschule* would be but a vocational school and not an institution for general culture. Neither should the *Realschule* stress the *realia* to the neglect of the *formalia;* the language studies and mathematics are the formal element, and the neglect of these subjects will likewise make the *Realschule* a purely vocational institution. To attain real success in any field, it is not enough to have amassed a wealth of positive knowledge. Mental alertness, refinement of taste, elasticity of the mind, ability to adjust oneself to unforseen conditions, and other fruits of a general cultural education are required just as well as positive knowledge, for they alone render vocational knowledge and skill available.

To connect the humanistic and formal elements with the vocational and material, the *Realschule* should devote the first half of its course to the former exclusively, while stressing the vocational and material elements in the second half. Thus the lower classes would give a course in general culture, while the upper classes would continue this culture course, but stress at the same time the vocational training.

While the *Realschule* is inclined to stress the vocational training to the detriment of the cultural subjects, the girls' academies lack all practical aims. Attempts have been made to introduce domestic science and thereby to offer the girls a subject of study directly related to their life work. Though this innovation should be welcomed in the interest of a more useful and less vacuous course of study, yet special care will have to be taken

lest the new subject also degenerate in the end into mere play-work. The home, the market, the garden, the nursery, and the sick room are life units directly related to woman's natural vocation, and they should govern the course of study of the girls' academies. There is, however, no need of special subjects of study to deal with these units, something similar being true, as we have seen, of the life units of natural history.[1] The girls' academies can not be expected to provide special training for the various professions to which women are admitted because of modern social conditions; but a general training for a woman's life work they can give by habituating their pupils to serious work and by imparting to them knowledge of permanent value.

CHAPTER LXIX

The Elementary School

1. The elementary school is the result of the union of the catechumenal school of the Church with the instruction in the fundamentals of education, *viz.*, reading, writing, and arithmetic. Its modern development has been influenced by the tendency to make its simple subjects formally educative. Compared with other schools, the elementary school labors under many disadvantages. It deals with the little ones only and dismisses them as soon as their minds become more receptive. It must receive all that are brought to its doors and must adapt the educational content to the dullest. It must itself do most of the work during the class periods, for it can expect but scant assistance from the home. It must accomplish much with little material. It must present to its pupils what they receive most willingly, understand with the least difficulty, retain most readily in their memory, and can best apply practically. It must employ strong and effective means to achieve its purpose. But withal the elementary school enjoys the advantage of dealing with the fundamentals of education and with intellectual agencies that are far-reaching in scope. The instruction of the elementary school is the broad and solid basis of the art of teaching and the training of teachers; and every teacher should welcome the opportunity of teaching for some time in the elementary school. The elementary school teacher, particularly in rural districts, enters into a closer relationship with his pupils and the

[1] *Supra*, ch. XLII, 2.

generations of pupils than is possible to other classes of teachers. He can and should exert such a moral influence as gives his vocation a character akin to that of the priest.

The religious element is the centre of the elementary school. It should not only take the form of religious instruction, but should be made a matter also of practice; *i.e.*, religious instruction should in all its points be correlated with religious practice and the life of the Church. Local forms of worship, special traditions, and religious customs are the best aids to religious instruction. The historical elements of religion, Bible History and Church History, must also be correlated with the mind and life of the pupil.

Let us suppose the elementary school teacher to treat the subject outlined at length, in Ch. LII, for the professor of the *gymnasium*, namely, the Christianization of Germany. First of all, the scientific materials would have to be eliminated, and more attention would then have to be given to local elements by making the mission-history of the respective territory or province the centre. The missions of the Merovingian or Carolingian period would have to be illustrated by the mission activity of the present. To present the subject as a whole, all the material could be put into the form of reading lessons, The religious instruction must call the memory also into play, and what is learned by heart should be fixed in the mind for life, and consequently the elementary school catechism should not be too large. It is undoubtedly better that a little be fixed firmly in the mind than that much be retained loosely.

2. The national element should primarily determine the content of historical instruction. In arranging the history course the teacher should remember that certain periods of a nation's history are more closely connected with the national consciousness than others. Thus the past events that extend through living traditions into the present, or whose effects are still plainly seen, are very closely connected with the national consciousness; witness the Napoleonic Wars, in certain parts of Germany the Seven Years' War, and in other sections the Thirty Years' War. The historical memories connected with these events should be carefully preserved, refreshed, and supplemented by full details, and the historical instruction of the elementary school should begin with these local elements. Any places near the school made notable by historical events should be mentioned and, if possible, visited by the whole class. Any tales or legends con-

nected with the days of the colonists or pioneers should be treasured by the school, for they lead the children's minds back to the earliest periods of their country's history. The ancient history materials should be treated partly in connection with Bible History and partly in connection with the national history. The four world empires, which were formerly so popular,[1] offer a good framework. In the English schools as well as in the French and German schools some portions of Biblical and Roman history may be treated in connection with the national history. These historical materials might well be collected in an appendix to the Bible History. The school readers should not be encyclopedic, but should retain their national character.

Folk songs and such art songs as approach the folk songs in tone should be included in the school readers and should have the preference in the singing classes. Here also the aim must be to preserve the nation's inheritance intact and to keep in fresh memory the good songs current among the people. The instruction in singing should assist in recovering what is lost, in restoring the relationship between the folk song and the church hymn, and, in brief, should attune the ear to what is noble, gentle, and sweet. The proverbs, "one man's wit and all men's wisdom," belong likewise to the national inheritance, and efforts are justly made to preserve them from oblivion.

The elementary school teacher should emphasize the local and home element more than the teacher in the higher schools. But it is a mistake to treat this local element in the form of a topography of the state in which the elementary school is located. In the first place, only that which the pupils can see with their eyes, which lies, therefore, within their sensuous horizon, should be treated as a local element. But those elements that may be connected with the primary elements in an easily intelligible way may also be treated as local elements, but only in the second place. Proceeding from these local elements, the teacher should gradually enlarge the scope of the geographical instruction so as to embrace the whole earth. The pupils must be taught to read and use the map, and a map of the local town or village should be studied first, as it affords much aid to the general explanation of maps.[2] The elements of astronomical

[1] *Supra*, ch. XLII 5.

[2] More extensive use should be made of the topographic maps published and sold at a nominal price by the United States Geological Survey, Washington, D.C.; cf *Press Bulletin of the United States Geological Survey*, Washington, April, 1913.

geography should also be taught in the elementary school, at least in so far as to explain those changes in the heavens that can be observed locally. The elementary school should restore to the masses at least so much of this knowledge as was a common possession, before printed calendars came into general use, when the man in the street was familiar with the time of the rising of certain stars and other signs of the change of the seasons. But at present this knowledge seems to be found only among the people living on the coast. The noting down of the changes in the heavens, vivid descriptions, interesting narratives, short memory lines resembling proverbs—these are the best media for imparting this knowledge, for if we would popularize the subject, we must avoid anything savoring of scientific form or terminology. Hebel's *Schatzkästlein* points the way to the correct treatment of the subject.

3. The teaching of reading, writing, and arithmetic is a primary object of the elementary school. The elementary school is evaluated by the men of practical affairs as well as by the higher schools according to its success in teaching these three subjects. And success can not be attained but by diligence and persistent effort on the part of teacher and pupils. Rational and improved methods may make the instruction more interesting and more educative, but can not dispense with the slow and patient work. It has been said that the pupils wrote better in former times, when the teachers talked less of methods of writing, and that there was also better figuring done in the schools, when the multiplication table was the only help known. But for this poor showing we may not blame the more rational methods. On the contrary, the greater interest centering in the improved methods has led the teachers to scorn the drudgery that is after all inseparable from elementary school instruction. The right thing is to add the improved methods to painstaking and unwearying care: the latter produces positive results, and the improved methods are an important factor in formal education.

We have seen that the instruction in writing contributes materially to formal education.[1] Connected with it is the instruction in grammar, whose primary aim is the development of the mind. But the grammatical instruction of the elementary school should be reformed in accordance with the principles of the science of education and of linguists. Grammar suggests of itself the application of analytic and heuristic methods, which

[1] *Supra*, ch. XVI, 2.

fact is quite generally overlooked.[1] A further mistake in method is made in analyzing sentences, if the categories of the parts of a sentence and of the parts of speech are treated as a fixed framework, for this practice ignores the interrelation between the two and fails to show the organic nature of language. This mistake can be corrected only by treating both categories according to the genetic method.[2] Again, amid the many exercises in sentence analysis the teacher does not give sufficient attention to the variability of expressing and coloring thoughts, although this variability shows the co-operation between the logical and the grammatical element of language much better than does the analyzing of sentences. Similarly, the subject of word study does not receive sufficient attention; whereas it is just the study of word-formation, of the means employed to this end, of the various meanings of words, of synonyms and antonyms, etc., that will elicit the children's interest, compel them to think, and increase their vocabulary.

Elementary language instruction should follow the formal steps as described in Ch. L, 8. The heuristic method should be employed first, for the respective language form should be discovered in the pupil's language consciousness and thence brought to light. After this the form will have to be shown in so many variants or instances as to arouse the pupil's attention and to hold it until the form is received into his mind. Thence the pupil proceeds to the step of comprehension by understanding and expressing in his own words the analogy, *i.e.*, the grammatical rule governing the respective language form. What has been thus understood must finally be committed to memory, and the respective rule must be applied to similar cases, first in a narrow field and then in a broader.

4. The formal steps will also prove helpful for the rational instruction in arithmetic, with this difference, however, that the steps are to be followed not so much in the single lesson as in the arrangement of the whole course. The first subject must be the obtaining of the concept of number, and this had best be done by visualization. Objects that can be seen should be added together, subtracted, multiplied, etc., and in this way the idea of number and of the arithmetical operations should be made plain.[3] Hence the teacher should, in the beginning, confine himself to such number of objects as can be controlled with the pupil's eyes. The aim to be kept in view in this preliminary

[1] Ch. XVII, 5 and ch. XLVI, 6. [2] Ch. XLIII. [3] *Supra*, ch. XLIV, 3.

work is to illustrate the law of formation, that is, the manner in which the work of addition, subtraction, mulitplication, etc., is to be done under certain circumstances, *e.g.*, by completing ten, as with 8+4, or by taking away from ten, as with 12—4, or by adding the same number, which will, because of the completing of the tens, result in a continued decrease of the units, as in the series 9, 18, 27, 36...8, 16, 24, 32, etc.

After this has been understood, it will no longer be necessary to confine the problems to what is perceived by the pupil, for the principle, once it is comprehended, is elastic enough to start the figuring without the aid of sense-perception. But this increase in mental skill does not dispense with the memorization, for the operations, even after they are understood, must be fixed permanently in the mind by means of the different arithmetical tables, among which the multiplication table is the most important. Arithmetic offers a practically unlimited field for varying the problems, and hence the teacher should never be at a loss for material to apply what has been comprehended. The problems, however, should not be creations of the wild fancy, but should be taken from real life and should as far, as possible, be interrelated with each other; and the rules that we laid down for algebra problems should be applied here also.[1]

For object lessons in arithmetic Pestalozzi recommended a square to be divided off into a hundred smaller squares,[2] and it is to be regretted that this method is no longer in use. There is no doubt that arithmetic can be taught much better if each pupil has the didactic material before him than if the teacher alone uses it for demonstration, as is the case with the different forms of the abacus. If the pupils themselves represent the numbers with peas or small sticks of wood placed on a checkerboard, they will readily understand the laws of formation and get a clear idea, especially of the principle underlying the columns of the multiplication table.

Form study will combine formal education with useful skill, if it trains the eye and the hand, cultivates taste, and develops the faculty of combination. It is advisable to let the children construct, as early as possible, different figures and to let them vary these in every possible way. The stigmographic chart ("stigmographisches Blatt") is the simplest help for such work, and, besides being obviously related to the abacus, it has the advantage of familiarizing the pupil with the ideal of co-ordina-

[1] Ch. LVI, 4 f.

[2] Ch. XLIV, 5.

tion, which is important for the later study of mathematics. More extensive experiments should be made with this chart, for with it many exercises connected with the Frœbelian gifts can be made without these gifts themselves. Form study should prepare also for industrial training; and we have seen how the industrial training can be given a general character while remaining correlated with the special trades.[1]

CHAPTER LXX

The Training of Teachers

1. Though the normal school is generally conceived as being related to the elementary school alone, we can not here restrict it to so narrow a field, because there can be no unity of the teaching profession[2] unless all the training schools for teachers are examined from a viewpoint common to all them.

Natural gifts, practice, and understanding are, as we have seen,[3] the preprequisites on the part of the pupils for successful study, and they are also the prerequisites for successful teaching. The prospective teacher must have a natural talent for teaching; he must through practice acquire skill in teaching; and by diligent study he must acquire knowledge. The practice and studies of the prospective teacher must deal with a double content; on the one hand, with the matter which the teacher must impart to his pupils and, on the other hand, with the process of this imparting. Hence the candidate for the teaching profession must acquire four things: (1) material skill, *i.e.*, mastery of the arts ("Fertigkeiten") which are the subjects of instruction; (2) material knowledge, *i.e.*, comprehension of the theoretical materials of instruction; (3) didactic skill, *i.e.*, familiarity with the technique of instruction; (4) didactic knowledge, *i.e.*, an understanding of the educative process.

The training school for teachers must presuppose in its students the talent for teaching, the *donum didacticum*. However, the training schools should take greater care to exclude all those that lack the natural ability for teaching. The apprentice who would learn a trade for which he is unfit, is soon discharged because of his obvious awkwardness. But with the long course of theoretical preparation a teacher's unfitness is often discovered only after he has entered upon his professional duties.

[1] *Supra*, ch. XXXII. [2] *Supra*, ch. LXVI, 4. [3] *Supra*, ch. XLVII, 2.

A practical test of a candidate's professional fitness would be to have the normal school admit him only after he has been tried out in the schoolroom as an assistant (even if only for very elementary work) to an experienced teacher. If this practical test were applied by all normal schools, the number of misfits in the teaching profession would become decidedly smaller.

As the natural talent for teaching is always more or less one-sided, it admits of many variations. He who is a good teacher is not necessarily a good instructor, and the aptitude for a special method of teaching more often excludes than includes the aptitude for other methods. Herbart has connected some individual forms of the *donum didacticum* with the conditions of many-sidedness, clearness, association, system, and method. "Some teachers," he says, "lay great stress on the explication, step by step, of the smaller and smallest components of the subject, and insist on a similar reproduction on the part of the pupils. Others prefer to teach by conversation, and allow themselves and their pupils great freedom of expression. Others, again, call especially for the leading thoughts, but demand that these be given with accuracy and precision, and in the prescribed order. Others, finally, are not satisfied until their pupils are self-actively exercising their minds in systematic thinking."[1]

This classification, however, ignores that kind of teacher whose forte lies in presenting, narrating, and describing, and whom most pupils would call a good teacher. But the punctilious teacher, who is more intent on fixing the subject-matter in the minds by means of many exercises, is appreciated by his pupils only after they have had occasion to apply the knowledge or skill for which they are indebted to his efforts. There is no valid reason for Herbart's distinguishing the teacher who calls for the leading thoughts from the teacher who exercises his pupils in systematic thinking. However, the teacher who succeeds in having his pupils enter into given thoughts is really different from that teacher who gives his pupils interesting and connected developments: the former teacher is a good explainer and has philological gifts, while the latter has a philosophical mind.

Thus the supplementing of Herbart's classification leads us back to our forms of instruction and our series of formal steps: the strength of the natural talent for teaching may lie on the

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[1] *Outline of Educational Doctrine*, transl. by A. F. Lange, London, 1913, pp. 52-53, § 67.

empirical, logical, or practical side. Or, to state it more precisely, the natural talent for teaching may be specially adapted to presentation, explanation, development, memorization, or practice. Any special ability means one-sidedness, and this should be corrected in the teacher's training by emphasizing those forms of instruction for which the student is less apt. But this must be done intelligently, lest any harm be done to the pronounced ability. Skill and efficiency, even if one-sided, will always act favorably on the pupils, as they will outweigh the defects incidental to one-sidedness.

2. Material skill must be evaluated from the same viewpoint of practical efficiency. In earlier times it was almost the only standard for judging a teacher's fitness. The writing of a good Latin style was thought sufficient qualification for teaching Latin, and the master of the three R's was thought well qualified for teaching in the elementary school. Nor was this standard wholly wrong: the teacher should be somewhat of a master; skill will win him more respect than theoretical knowledge, and the pupils will more readily excuse a slip of the memory than bungling. The demand is justly made that the school should give as much attention to practical skill as to theoretical knowledge and as much time to practice as to study; and it is undoubtedly necessary that the teachers' training school should lead the way in this reform. In evaluating a teacher's ability more weight should consequently be attached to material skill. Thus the perfect mastery of Latin or Greek etymology should be a *sine qua non* for the teacher of Latin or Greek; and such a mastery is of greater importance than theoretical knowledge. On this score, too, we see the evil effects of disconnecting the university from the schools. In training teachers the university seems to be aiming at making savants of those who choose the teaching profession because of its material benefits; and any special skill required for the process of instruction will—so it is said—come of itself with the practical work in the school. However, this is expecting too much of the principle embodied in the proverb, *Fabricando fit faber.*

The modern training of teachers gives particular attention to the acquiring of much positive knowledge; but even here it may not be amiss to recall certain conditions essential to good teaching. The theoretical instruction of the teachers' training school must beware of the encyclopedic tendency, whose result is superficiality, and must concentrate. However, for training

the teachers of the secondary schools the course of study should not be narrowly specialistic but broadly cultural.

The subjects taught in the elementray school will best concentrate the training course of the elementary school teachers. But it is not enough, as the Prussian school regulations of 1854 put it, "to fit the students to grasp and master in all its bearings the subject-matter of elementary school instruction." On the contrary, the normal school should deal with the scientific foundation of the elementary school subjects and should note the points where these subjects are connected with science, and should thus lead up to the threshold of science, without, however, leaving the secure basis of elementary instruction.

Thus the language teaching, for instance, should be conducted in the normal school along the following lines. The explanation of the categories of grammar should be based on Latin, and this necessitates the teaching of the elements of Latin. Special attention should be given to word study, *i.e.*, word analysis and word building. The elements of phonetics should also be taught. And for making the instruction in penmanship both instructive and interesting it would be well to illustrate graphically the history of our system of writing.

The subject-matter of mathematics should be related in a similar way to arithmetical instruction and to form study. Hence it is advisable to introduce easy matter from the theory of numbers, to practice combination and variation with interchangeable objects, and to exhibit geometrical visualizations of numerical relations, as were formerly in vogue in the schools, etc. In order to train the student for teaching home geography, it is necessary to acquaint him in a thorough and practical way with the questions and problems to be considered in characterizing any place or territory. There is abundant opportunity for introducing scientific matters in connection with the subject of home geography;[1] and a teacher trained thus could render valuable service to science. J. Grimm expressed the wish that the rural school teachers assist in collecting the remains of old customs and manners; and they could also assist in making and recording meteorological observations.

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[1] There is a good list of questions in the *Fragen zur Förderung der Ortskunde* Vienna, 1865, Pichler. The questions deal with the following subjects: minerals, wells, springs, plants, animals, dialect, names, songs, dances, fables, children's games, popular customs, legends, food, clothing, living conditions, local history, churches, mansions, public and private buildings, antiquities, caves, lakes, ponds, rivers or creeks, swamps, winds, storms, fog, rain, streets, etc.

3. The teachers of higher schools must be led farther than to the threshold of science, for they must enter into it. If the *gymnasium* (or the college) is the elementary school of science, then its teachers must have advanced beyond the elements to science itself. But to advance so far makes specialization necessary, and it is therefore a just demand that the professor of the *gymnasium* should have specialized at the university. But lest he grow narrow-minded, he must pursue, beside his special subject, a course of general studies. The teacher of a particular subject may not teach that subject independently of the rest, but as part of a course of general knowledge, and this he can not do unless he have a view of the whole domain of education. Therefore, while training for his professional work he must remain in touch with the basic sciences, especially philology and philosophy, and, after them, with history. A course of public lectures, if properly arranged, will meet this need—except in philosophy, for the prospective professor of the *gymnasium* should take a regular course in this subject.

Beside the studies required for his special and general training the prospective teacher should take a course in the science of education. Only such a course can lay the foundation of didactic knowledge. Here the student should be familiarized with the field in which he is to labor; he should become acquainted with the system of education in general as well as with the special kind of school in which he intends to teach. He should learn to know the social and historical basis of the system of education; and should learn to trace its history and its relations to the other forces of life. He should therefore be trained to study education in its end, its content, its forms, and various agencies, and to inquire into its relations to ethics, psychology, logic, and epistemology. In this way he will discover the bond that connects his professional interests with the general interests of the race. We have found culture to be real and true if it connects what is specific in a profession with the generic, and so spiritualizes the vocational duties;[1] and the same test may determine whether the teachers' training school be graduating truly cultured teachers. These cultural studies must in the case of the elementary school teacher be limited in scope, yet they are essential to his training. He should also view things at long range and in their true perspective; he should know what place his vocation occupies in a larger whole, and

[1] *Supra*, ch. IX, 3.

thus come to note the bonds that connect his daily work with science.

The arrangement of the studies should offer little difficulty. But whether and how the didactic skill should be made a matter of instruction, is still a moot question at least with regard to training the teachers of higher schools. That this is still a debatable point, is the result of the preponderance of the theoretical element over the practical—a characteristic feature of the present age. The process of instruction calls for skill, technique, mastery, and art; but it certainly demands no less imperatively some practical training for successful instruction. Practical training alone will connect theory and practice. If it is lacking, then the theory will lack the element of application, and the later practice in the schoolroom will lack rules and directions. The final result will be routine methods and unassimilated knowledge.

A course of theoretical instruction *and* practical training will correlate and connect the knowledge and the application; and such a course is not beyond the sphere of the university. Such a course should include the systematic preparation of certain parts of the materials of instruction, outlines of class periods, practice in teaching in the presence of all the students taking the course (to be followed by general criticism and discussion), model lessons and class periods conducted by accomplished teachers. It is plain that this course requires that the normal school or the educational seminar of the university be connected with a school, and the closer this connection is and the more opportunities there are for observing the effect of educational methods, the more fruitful of results will be the practice teaching. It is best if classes from the elementary school as well as from secondary schools are available for the work of the practice school. This arrangement offers the further advantage of unifying the training of the teachers of all grades of schools.[1]

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[1] *Supra*, ch. XXXVI, 4. For further details concerning the training of teachers of higher schools, see Willman's essay, published in the *Revue internationale de l'enseignement supérieur*, Paris, 1881, No. 4, dealing with conditions in Germany and Austria; cf. also Willmann, *Das Prager pädagogische Seminar*, Vienna, Herder, 1901.

EDUCATION IN ITS RELATION TO THE SUM TOTAL OF LIFE'S DUTIES

1. Just as the function of an organ can be understood only in the light of its sharing in the life of the organism, so the various fields of man's activities can be understood only in their teleological connection. For this reason our inquiry, to be complete, must trace the relationship between education and the sum total of man's duties, and in this way the educative process, which was the subject of our inquiry, and which was unavoidably isolated, will be brought back to the large whole of which it is but a part. The science that treats of man's duties is ethics, and our science of education has frequently laid this science under contribution, especially when dealing with the ends and the system of education; and to it, as to the definitive science, we would now submit the results of our investigation.

The ancients defined ethics as the inquiry *περὶ βίου καὶ τῶν πρὸς ἡμᾶς*. This may be rendered as the science dealing with the duties of human life, for the Greek wording contains a hendiadys, and the phrase "of life and our duties" is equivalent to: "what is our duty in life." The Greek definition has several points in its favor. It expresses the normative character of ethics as of the science that deals with duties. It also brings out the fact that the field of ethics is life, which can and should be conceived as partly individual and partly social. And, lastly, it gives a view of life in general, that is, the organic world.

Thus there are also primitive duties of life, which, while rooted in the organic nature, are outside the pale of the moral world, but are, nevertheless, the best subject to examine before treating the moral duties, since we shall find a natural transition from the primitive duties to the moral duties.

The first and plainest duty imposed by natural law upon every living being is that of preserving its life. The instinct of life-preservation is the basic instinct of all animal organisms. Its two forms are the instinct of self-preservation and the instinct of species-preservation; and these two instincts manifest themselves respectively in the love of life and in the instinct for propagation. Self-preservation implies, on the one hand,

the supplying of the means of subsistence, the object of the instinctive craving for food, and, on the other hand, the protecting of life from dangers, the object of the instinctive seeking for protection. The instinct for the preservation of the species results in mating and induces the parents to protect and bring up their young. Feeding and mating, protection of its own life and of the life of its young—these are the sum total of the life-activities of the brute. The objective points of these activities are the individual self and the species, and the senses are the instruments. The brute is wholly taken up with sensuous-selfish instincts. These activities and instincts are powerful motor forces in man's life also: "Magister artis ingenique largitor venter," as an ancient poet puts it; and a modern poet tells us that hunger and love are the dynamic forces responsible for the bustle of human life. Because the human race consists of individuals and represents a species, the preservation of the life of the individual and of the species must be recognized as a human duty, and the sensuous-selfish element must for the same reason be included in the circle of human interests.

Attempts have been made to let this sensuous-selfish element represent more than a factor, to have it recognized as the principle that governs all human duties; and consequently man would be regarded as a sublimated brute. But aberrations of this kind would be prevented by merely considering how strongly opposed this sensuous-selfish element is to the moral element, after which the whole inquiry has been named, and which, if ignored or only curtailed, must lead to grave errors. Morality connotes primarily the control of the sensuous instincts. A moral man is primarily one who is not a slave to lust and lewdness. All morality connotes purity of life and the senses, such as can not coexist with man's animal instincts uncontrolled. When a man allows his lower nature to control him, we call his life beastly and describe it as unworthy of his high calling. And the control of the selfish instincts is likewise essential to morality. Morality must check the selfish instincts when they prompt an attack upon what belongs to our fellowman. Such attacks upon a neighbor's rights are called brutal, thus forcing the common opinion of men that the brute is the representative of unchecked egoism as well as of uncontrolled sensuousness.

2. The sensuous-selfish element is but a component of human life, and it alone offers no explanation of human life. The latter must be conceived as a resultant in which a second force is sim-

ultaneously active. This second force must be opposed to the first, and the superficial observer might regard the rational-social tendency as such. This tendency controls the instincts and unites the individuals; it reasons theoretically that the special must be subordinated to the general, and results practically in subordinating the interests of the individual to those of the community. To retain the figure of co-operating forces, we should say that this second component is too near the first, and, because of the small angle it forms, it does not change its direction enough. The merely rational will not effectively control the sensuous, and the social tendency primarily multiplies the selfish elements. Social life may, indeed, check somewhat the high-handed proceeding, but does not attack egoism at the root. It operates from the outside upon the inner nature, but not from within upon the outer nature. The mechanical pressure which it exerts is, though indispensable, yet insufficient, and it must needs be supplemented by an organizing tendency that is active from within.

We must, therefore, seek a different and purer element to oppose the sensuous-selfish. And this opposing force is no other than the supersensuous-unselfish. Here the transcendental tendency is opposed to instinct; sacrifice to egoism; and the inner bond, the *religio*, to all high-handed and arbitrary proceeding. Only the transcendental tendency of human nature can effectively oppose the instincts, for it is something elemental and powerful as are the instincts themselves. It alone is able to attack them at the root and to change their inner nature. By opposing the life of the beyond to the present it secures the Archimedean fulcrum for controlling the instincts. It teaches us to hold this present life in small account because of the life to come, and yet to hold it in great account as leading to the life eternal. In its unselfishness it possesses the root of charity which unites man with man, not in the manner of an instinct, neither in the manner of a rational association, *i.e.*, outwardly, but unites them inwardly and in the common devotion to a third and higher sphere.

Religion is the source of morality. It is the basis of purity and moderation, and these are characteristic traits of morality. The inner harmony, the fruit of self-discipline, is only external and merely reflects that harmony which is the fruit of the peace in God; and likewise the justice which can only bend the self-will is but a reflection of the charity which melts all self-will. Thus we see that to the duty of life-preservation which is based

on sensuous and selfish motives, is opposed the higher duty of consecrating human life and of so incorporating one's lowly self with the order that is above the earth and its interests. These two duties, life-preservation and life-consecration, mark the extreme points between which life, *i.e.*, the moral world, extends, and in this broad extent we behold the material and the ideal, the animal element and the transcendental, interlaced in various organizations.

In order to preserve his life, man turns to economic interests and follows a trade. The same interests, joined with the spontaneous delight found in representing things, result in art, while the craving for knowledge produces science and research. Social intercourse and community of life create the organ of language, which is the vehicle of both polite and scientific literature. The term culture embraces all these intellectual treasures, which are a fitting content of human life. There is a mutual relationship between culture and civilization, the latter embracing all the institutions and forms of life which make man a member of a community. The foundations of civilization are customs and rights, the family, society, and the State; and its highest form is that stage of refinement when the external forms of civilization have entered into the inner nature, so that the outer and inner man are in perfect harmony.

3. Culture and refinement are conditioned to a great extent on natural and material elements. Instincts (which are partly analogous to the instincts of the brute), needs of all kinds, struggles, and sensuous-selfish tendencies have co-operated in regulating human life and in giving it objects to strive for. But simultaneously with these lower motives a higher tendency and one foreign to the natural man began to exert itself, and it taught that bodily needs are of secondary importance; and it also put an end to the strife caused by the struggle for existence.

Man is like a tree which obtains its nourishment, not only from the soil wherein its roots are buried, but also from the height to which its crown extends. Without the transcendental tendecny the arts would never have gotten beyond mere handicraft, on the one hand, and beyond mere playing, on the other. Religion inspired the artists both with a higher aim and a more serious purpose: it led man to advance from building his house to the constructing of temples and cathedrals, from the playful imitating of nature to the sculpturing and painting his objects of worship, from songs to hymns, and from dances to processions.

Literature and science owe much of their development to the service they rendered to religion by preserving its teaching. Science and art are more esteemed than the trades because they may be cultivated in an unselfish spirit, without a thought of one's personal needs or gains, the sole object being the attainment of what the mind has proposed to itself as an aim. But unselfish devotion to an ideal is born of the transcendental tendency of human nature. The struggle for existence can not teach it, for from this viewpoint such a devotion appears unreasonable and foolish. All culture is, furthermore, in need of tradition; but the latter is not fixed and sacred unless it be entrusted with the transmission of a sacred content. Just as tradition gives a content to human life, so authority regulates and controls it. But for all authority there must be a source whence the obligation can ultimately be derived. But this ultimate source must be sought outside the human relations, as these are themselves derived and not primitive. Only a higher order, which affects the innermost nature of man, can obligate his mind and the operations of his soul; and human authority must be content with externals and can not claim the right to bind the soul, unless it be commissioned to do so by one who is possessed of this right.

Good sense has ever considered the higher order, which is the object of religion, the basis of the rule of life. "All human laws," says Heraclitus, "are supported by the one divine law."[1] Cicero voiced the common opinion of the ancients when he wrote: "We are beholden first to the immortal gods, next to our country, then to our parents, and finally to the rest of men in a descending scale."[2] Nor is it surprising that the ancients recognized that the treasures of culture are the gifts of the deity. "That god of all gods do I praise," says Euripides, "who has raised our life above that of the brutes, who gave us reason and language, which is the messenger of thought, who gave us fruit for food, protection against the weather, navigation over the seas, etc."[3] Plato teaches that we have received virtue by divine dispensation.[4] Pindar says that man acquires wisdom by the help of God.[5] Philosophy and science are, according to Cicero, the inventions of the gods.[6] The same truth is embodied

[1] Fr. 123: τρέφονται γὰρ πάντες οἱ ἀνθρώπινοι νόμοι ὑπὸ ἑνὸς τοῦ θείου.

[2] *De off.*, I, 45: "*Prima officia Diis immortalibus, secunda patriæ, tertia parentibus, deinceps gradatim reliquis debentur.*"

[3] Eur., *Suppl.*, 198 ff. [4] *Meno.*, p. 100. [5] *Ol.*, X, 10.

[6] Cic., *Tusc.*, I, 26: "*Philosophia inventum Deorum.*"

in the Spartans' prayer in which they begged the gods to give them τὰ καλὰ ἐπὶ τοῖς ἀγαθοῖς, the beautiful on the ground of the good;[1] for this prayer expresses the belief that the gods are responsible alike for the standard of life and its worthy content.

But the laconic words of the prayer give expression to a further truth, which has likewise been accepted universally: the beautiful must be grounded on the good; creative activity on, right deeds; and the content of life, on the rule of life. The ancients distinguished between human activity as controlled by religion and habits of righteousness and the activity that lacked these controlling forces. This distinction is brought out in the contrast between the myths which traced the beginnings of culture and civilization to the Chthonian deities, Dionysos and Demeter, and the other myths which reported that the Titan Prometheus, the enemy of the gods, was the teacher of men. The Chthonian worship was a service of thanksgiving for the priceless gifts of the gods. But the gifts of Prometheus were regarded as a fatal inheritance, which, though they enkindled new desires and disclosed new aims, lacked the moral basis and so could not teach moderation and consequently could neither constitute a rule of life.

4. That the beautiful must be based on the good, and civilization on refinement, and wisdom on self-control, is also the leading idea of ancient ethics. Thus Plato and Aristotle derive ἦθος from ἔθος, character from habitutation, and insist that the soul should be prepared by a moral life for knowledge and understanding, just as the field is cultivated before receiving the seed.[2] The series: nature, habit, understanding,[3] can also be traced back to the same view. Plato says plainly that those of a material trend of mind (εἰς σῶμα πᾶν ἕλκοντες) must first be made better, before they can be taught something better.[4] The Stoics expressed the same thought in the maxim: "Mores primum, mox sapientiam disce, quæ sine moribus male discitur."

Christianity has confirmed and clarified the truth and depth of the ancient view. The whole rule of life is traced back to Him after whom "all paternity in heaven and earth is named."[5] The content of life is derived from the same source, for "every best gift, and every perfect gift, is from above, coming down from the Father of lights."[6] Righteous living makes the teaching intelligible, and righteous deeds give the right understand-

[1] Plat., II, *Alc.*, p. 148. [2] Ar., *Nic. Eth.*, X, 10. [3] *Supra*, ch. XLVII, 2.
[4] *Soph.*, p. 264. [5] Eph., III, 4. [6] James, I, 17.

ing: "The fear of the Lord is the beginning of wisdom, and a good understanding to all that fear Him."[1] The Gospel confirms this truth: "Blessed are the clean of heart; for they shall see God."[2] "If any man will do the will of the Father, he shall know of the doctrine, whether it be of God, or whether I speak of myself."[3] "The weak soul," says Clement of Alexandria, "is, like the ill man; the latter is in need of a physician, and the soul is need of a guide to heal its passions; and only sfter these are healed can it be led by the teacher to pure knowledge."[4] All the didactic writings of Clement of Alexandria are planned according to this principle. Similar views are expressed by St. Augustine: "*Mores perducunt ad intelligentiam;*"[5] and by Rhabanus Maurus, the *Præceptor Germaniæ:* "*Nemo perfecte sapit, nisi is qui perfecte diligit.*"[6] St. Bernard of Clairvaux says: "*In tantum cognoscitur Deus, in quantum amatur.*" Richard of St. Victor teaches that the active virtues precede knowledge: Jacob, typifying grace, first weds Lia, the will, and only later Rachel, the understanding; Rachel gives birth to self-knowledge (Joseph) and contemplation (Benjamin).

Thus the duties of human life are interrelated with one another. Their spheres do not lie beside each other, but the presuppositions of the one are included in the other. The roots of refinement lie in religion, and the roots of culture lie in moral habits as well as in religion. Culture is indebted to religion for the tendency toward the ideal, and its tradition is consecrated and fixed by religious traditions. But from refinement it learns how to shape its various organizations and to fix their limits.

5. Modern ethics has disarranged this relationship between the duties of life. Despite their other differences, the modern systems of ethics are one in refusing to acknowledge the transcendental element among the first principles of morality. They ignore that the good is also pleasing in the sight of God, and thus they destroy the bond that connects it with the supernatural; they attend to the natural exclusively. They overlook the support of authority and the starting-point of tradition, and hence relegate to the background the forces that give stability to society and continuity to activity. But this is identical with ignoring the objective conditions of morality. The subject, the

[1] Ps., 111, 10. [2] Matth., V, 8. [3] John, VII, 17.

[4] *Pädag.*, I, 1; cf. Vol. I, ch. XVI. [5] *Tract. 18 in Joh. 7.*

[6] *De inst. cler.*, 3, 5; P. Haffner, *Grundlinien der Geschichte der Philosophie*, 1881, p. 518.

individual, fills the horizon, and the problem of explaining the moral world is narrowing down to an explanation of the moral consciousness.

But even for this narrow problem the essential point of relationship has been lost, for modern ethics fails to recognize that morality is based ultimately on "the striving for what is above," on "the hunger and thirst after justice." But if morality does not mean a striving for what is above, then we shall, for want of any other explanation, be compelled to assume either that it is born of the striving for what is below, or that there is no striving at all, the moral having developed from the theoretical function, the latter being only the higher thing retained. The first explanation is wholly inadequate and is but a restatement of the Sophists' arguments, which Plato has for all time disposed of. Neither does the second explanation, which repeats the fallacy of Socrates and intellectualizes the good, solve the problem: it does not explain evil, much less sin, and can prove neither the normative character of the good nor that any commandments oblige in conscience. Reduce this theory to practice, and it will degenerate either into subjectivism by making the reason of the individual autonomous—thus surrendering entirely the key that might reveal the mysteries of the moral world—or it transforms the moral element into the process of the evolving reason—thereby lowering morality to a mere element of culture.

Schleiermacher committed this mistake when he declared that the aim of moral acting is that reason secure the mastery of nature, or even that nature itself become endowed with reason. All moral acting is reduced then to an endless work of cosmic character, which is ever in the making, but never completed, striving—without ceasing and without any assurance of ever finding a solution—for a state which Schleiermacher, unconsciously satirizing himself, calls "eternal peace."[1] This is identical with the most modern conception of culture, which is inflated so as to embrace the totality of all human activities, and which presses into its service all that belongs to refinement, and thereby separates it from the religious basis that is no longer intelligible. The apparatus of culture will then fill the consciousness and crowd out the understanding of the end and aim of culture. The final result is that "man has at his command the richest instruments and can set in motion the most

[1] *Sittenlehre*, § 101. *Werke zur Phil.*, II, pp. 495, 499.

powerful forces, but can not withal state to what end he is exerting himself, can not say whether his busy and strenuous life means any gain for himself; and he, though outwardly most active, will then exert no influence upon his own inner nature, because true independence of the mind, a spiritual world distinct from, and independent of, the processes of nature is impossible under such circumstances."[1]

For evaluating the treasures produced by this feverish cultural activity there is no standard but this activity itself; their sole value seems to lie in the number of calories that they add to the flame that is ever in a blaze. And there is a close resemblance between the latter and the fatal gift of the Titan: "*Audax Iapeti genus ignem fraude mala gentibus intulit.*"[2] "Anything new appearing on the scene is appraised, not for its intrinsic value, but for its present usefulness; it is appreciated, not for its perennial worth, but for its meeting the needs of the hour. Thus the form of the ideal is destroyed, and with it all particular ideals must disappear as being the hazy creations of a deranged mind and the melancholy ruins of a low stage of development."[3]

6. It is not difficult to recognize the self-contradiction in the modern conception of culture; but it is difficult to realize how vain is the hope of so many well-meaning men who believe that this conception will in the course of time correct itself. By no means; to establish new bonds where all bonds have been destroyed, to bring back something to the proper place whence it has been dislodged, this requires that the standpoint both for studying and for correcting the defect be located outside the modern world. And this Archimedean fulcrum is to be sought nowhere else than in the gracious power of Christianity, which in a former time set right the world—the ancient world—when it was out of joint.

"The ideal and the end of history and of all mental development is, according to the principles of Christianity, the kingdom of God as based upon the foundation of the family: the family of individuals, the family of the nation, and the family of all the nations and of the whole race. Whatever is of any advantage to the individual family, either with regard to its physico-material, or its intellectual-moral well-being; and whatever will

[1] Eucken, *Prolegomena zu Forschungen über die Einheit des Geisteslebens*, 1885, p. 8. [2] Horace, *Od.*, I, 3, 27 ff. [3] Eucken, l. c., p. 9.

enlighten, or beautify, or spiritualize the national family; whatever, finally, will prove a bond of unity for the members of the great human family by eliminating their differences and so joining them more closely together—all of this is true culture and worth striving for. Over and above this form of life there is a second integral element of the kingdom of God: the State, the institution of the legal and moral life of the family, the nation, and the race. Whatever will be of any aid in developing the order of right and law, in furthering morality, or in strengthening and perfecting what is good and right, or in suppressing what is evil and unjust—all of this is true culture and worth striving for. But over and above the family and the State there is the Church, the peculiar organ and instrument of the kingdom of God, whose mission it is to raise the life of man to its highest and supernatural end. And this Church is not an abstraction, not an invisible union of souls with the same ideals and aspirations, but the visible organ of a concrete institution, as concrete as the family and the State, abounding in spiritual power and moral dignity and holding forth to the individual as well as to the whole race, to the family and the State, the highest truth, the spiritual means for attaining moral perfection and saintliness, and the divine conditions of temporal welfare and eternal bliss. Whatever increases the esteem for Religion, makes more holy its worship, gains more honor for its truths, or spreads its divine life—all of this is true culture and worth striving for. The Family, the State, and Religion—these were from the very beginning of history the pillar and the ground of life and the support and the end of culture."[1]

7. After culture has received its proper place among the sum total of life's duties, it will not be difficult to assign the right place to education also. It is the end of education to assemble properly the cultural values, and so to impart them to the individual as to give him the free use thereof; and thus the transmission and continuity of culture are assured. An exaggerated conception of culture will necessarily entail an exaggerated estimate of the meaning and value of education. The culture fanatics expect the school to be the salvation of nations and the healing of all ills. Their shibboleths: "Education is freedom;" "To be educated is to be moral;" "Salvation cometh by education;" "He who can read is a redeemed man," etc.,—these

[1] Adeodatus, *Die Philosophie und Kultur der Neuzeit und die Philosophie des hl. Thomas von Aquino*, 1887, p. 28.

shibboleths revive the errors of the 18th century concerning the value of enlightenment, for in their zeal for knowledge the men of that period forgot the duties of conscience as well as the value of practical skill. Similarly, many modern educationists would free nature and develop it by means of an education that is to supplant all other humanizing agencies and to be wholly independent of higher aims. This involves the complete reversal of the inner and true relationship between these various activities. It is diametrically opposed to sane ethics and sane pedagogy. The higher aim is the first thing to be determined. Refinement and humanization must be rooted in sanctification. Education and culture must be based upon sanctification as their foundation. And thus sanctification is the norm for the treatment of the natural: the lower should adapt itself to the higher, what is passing and temporal to the eternal, and the means should be adjusted to the end; and not vice versa.

To ascertain whether education is properly fulfilling its duties toward the race, we need only note whether the cultural values are so made the property of the individual as to focus his desires and striving upon what is right, good, and holy. To this end those elements of the educational content that exert a moral influence must be made the core subject. Furthermore, theory and practice must go hand in hand, and their effects must extend so far into the life of the pupil as to co-operate with the results of the disciplinary and moral training of the school. These same points should be observed in social education also, for the educational needs of society are determined by the individuals' needs, with this difference that the social form adds some new problems. The process of social education will function properly, first if it is focussed upon the totality, of the spiritual treasures of the race; observing this order, however, that the treasures whose transmission is a sacred duty are rated first in importance and receive the largest share of attention, whereas those whose transmission is in keeping with the high calling of the race, are second in importance and attention, while those, finally, which are merely useful, are third. To function properly, the process of social education must, secondly, employ, in accordance with the importance of these various treasures, the social unions as its aid, and strive, within the proper limits, to perfect them. And, thirdly, the process of social education must, mindful of its being internally related to tradition and rooted in authority, seek to establish a connection with that order which alone consecrates these factors

(tradition and authority) that are so important for preserving and unifying important elements.

That education should occupy this position, follows from its very nature, and there is no need of further proof, as the best educational thought of all ages has recognized this as the proper function of the educative process. The relationship between education and the higher orders has been determined best and most wisely by the early Christian thinkers and early Christian customs. In one point we must go beyond them, for they worked with but a limited circle of cultural values. We now have greater resources, yet we are not justified in abandoning the solid foundations which their wisdom constructed. But since this has been done, we must needs return to them, not by a blind reaction or a short-sighted restoration of former conditions, but guided by that Spirit whom the Church invokes in her Pentecostal hymn to wash what is soiled, to freshen what is dry, to bend what is rigid, to warm what is cold, to heal all wounds, and to lead back all that have strayed from the path.

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